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East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

No. 2465

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CONTENTS

SECTOR RELATIONS IN AGRO-INDUSTRIAL COMPLEX DISCUSSED

Prague PLANOVANE HOSPODARSTVI in Czech No 7, 1983 p 1-11

[Article by Eng Karel Jelinek, CSc, Deputy Chairman, State Planning Commission: "Development of Intersectoral Relations in Agro-Industrial Complex"; passages enclosed in slantlines printed in boldface]

[Text] The improved system for planned management of the development of agriculture has been based since 1982 on long-term findings and experiences in planning and management at individual stages of development of this sector. It utilizes and develops positive principles and rules of the economic system of management and contains new measures replacing rules and tools of management that in a given period proved inadequately active or were already countermanding social interests and needs. It particularly promotes planning and establishment of inter-sectoral relations to agricultural and food production. It adapts economic tools, conditions and rules for financial backing of expanded economic renewal, improved application of khozraschet [cost accounting system] in both sectors of socialist agricultural enterprises and the system of remuneration for work according to merit in the attained results of production and overall economic results.

The system of measures and rules of the improved system for planned management of agriculture throughout the complex contains systemic, economic and organizational conditions for achieving more active, proportionate and effective participation by agricultural enterprises in the intersectoral division of labor toward meeting the planned needs of the national economy in agricultural products and foodstuffs with a higher level of utilization of all forms of expended social labor. Multifaceted production conditions, while subject to the substantial effects of considerably variable natural factors, call for higher demands on and complexity in the planning of agricultural production and planned management of economic renewal and its attained results. Even under these complex conditions, the rules and measures of the system for planned management of agriculture are based on the requirement of combining enterprise interests with social interests, with priority accruing to social interests. This creates in individual enterprises conditions posing considerable demands on effective intensification of agricultural production and production of food, which is based on a substantially higher complexity of external and internal conditions of economic development in comparison to past periods.

The rules and measures of the improved system for planned management of agriculture are a significant factor, but not the only one, which influenced and determined the conditions and results for development of agriculture and food production in the planned proportions and relations. For that reason, the results achieved in 1982 cannot be related merely to their effects, even though they undoubtedly did actively influence those results. application of these rules and measures was certainly not most optimal under all economic production conditions of the very extensive complex of agriculture and food production and their material backup by other branches of the national economy. However, it represents the next and very important stage in improving the processes of economic management in implementing the intensification of production and improving economic effectiveness in all branches that share in providing inputs of social labor toward the nutritional sustenance of the populace.

Agricultural and food production does and will continue to represent a substantial share of the national economy. This is factually reflected in the assessment of the national economy as a whole and also by the significance accruing to economic renewal in these branches and in meeting the needs of economic, social and societal development.

The share of the agricultural and food complex in the national product in 1980 amounted to more than 20 percent (economic renewal at prices which are divorced from value and financing is conducted by means of other economic tools). The share of the mentioned sectors in material consumption in 1980 was almost 25 percent, which is the consequence of an all-round intensification of food production together with increasing inputs of past social labor inputs and a decreasing share of labor by personnel in the mentioned sectors, and a higher material-intensive orientation objectively resulting from the nature of production that is substantially affected by natural conditions.

The share of the agricultural and food industry sector in national income reached 12.6 percent in 1980 as a result of valuation of production and its share in material consumption. In economically advanced countries this share of newly-generated value in the mentioned sectors is even lower and reflects the high degree of participation by industry and other branches in food production.

The share of foodstuffs in retail turnover is very substantial. In 1980 it amounted to approximately 46 percent (after adjustments of retail prices it increased to 48 percent). From among the economically active populace the share of personnel in the agricultural and food complex reached 16 percent. Its share in the total long-term assets in the production sphere amounts to roughly 20 percent.

The participation by other branches in food production in the extent of the expended volume of social labor (in the value of material consumption) represents 8-9 percent of the total national product of the national economy. Thus, the share of the agro-industrial complex in total national product may be put at approximately 28 percent.

/On the basis of the Seventh 5-Year Plan the specified shares of the agro-industrial complex in the overall development of the national economy will undergo no significant changes until 1985 and the mentioned complexes will thus remain in volume a sizable component of the national economy as a whole. The basic requirement is that their qualitative position keep constantly improving, particularly by making maximum use of our natural and economic conditions toward improving the quality of nutrition and increasing self-sufficiency./

Development of agriculture and food production is implemented by increasing inputs of social labor, specialization, development of production forces, the technological and economic level of the entire national economy. The forms of management and planning of intersectoral relations to food production were in the past subject primarily to the general rules of supply and demand relations.

Volumes of deliveries of decisively important production assets were implemented on the basis of concepts of intensification and substitution of direct labor input from the chemical and machine-building industry sectors, construction and additional sectors of the national economy.

The constantly increasing participation of sectors supplying production assets in agricultural and food production, internal specialization, organization and development of services, demands for an improved technological level of the means of production, their higher productivity, efficiency, complexity and optimization of the material and value proportions of effective economic renewal call for planned management of these intersectoral relations at a higher level of long-term outlook.

/For that reason the CSSR government adopted by its Resolution No 249 of 1981, as did subsequently the CSR and SSR governments, within the framework of the improved system of planned management of agriculture as of 1982, measures and rules for more comprehensive planning, particularly with regard to material intersectoral relations within all the sectors that participate in providing nutritive sustenance for the populace--the entire agro-industrial complex. This should facilitate the attainment of a more balanced development of food production more optimally backed by factoral dependencies, as well as an improved reliability and stability of this development. At the same time there is a need for providing for the requisite anticipatory outlook in these intersectoral relations, so that in all sectors the factual prerequisites for the development of production capacities, raw materials, international division of labor and socialist economic integration and other forms for meeting justified production needs for the intensification of agriculture and of food production can be created with a lead in time and purposefully. The most urgent task in this respect is upgrading the role of research and development in providing more productive, efficient, operationally more reliable and improved means of production for promoting intensity in food production with a simultaneous increase in the social productivity of labor./

The approved rules for an improved level of intersectoral relations within the agro-industrial complex were applied to preparation of the Seventh

5-Year Plan. Basic material relations among the sectors of agriculture and nutrition as well as suppliers of production means were dealt with on the basis of balances in which the distribution of deliveries is controlled by the state plan and, further, in which responsibilities are assigned to the relevant ministerial departments and, ultimately, to the relevant economic production units. Deliveries of machinery and equipment in key types and replacement parts are additionally determined on the basic of specifically stipulated volumes for the Seventh 5-Year Plan in keeping with CSSR government Resolution No 218 of 1980.

To meet the most important needs for agricultural products and foods, the state plan distributes deliveries from 5 balances and deliveries for meeting additional such needs are distributed from 24 balances within the jurisdiction of ministerial departments responsible for agriculture and nutrition. Deliveries of key production means for agriculture and the food industry numbering 116 balances are implemented within the jurisdiction of ministerial departments responsible for supply sectors and, at the level of medium elements of management, by supply and demand relations.

Deliveries of production means for agriculture and food production are provided in the state plan in the form of key types of fuels and energy, propellants, lubricants, metallurgical materials, machining products, replacement parts, tractor and automobile tires, industrial fertilizers and other chemical products for agridultural production, key types of chemical products and packaging materials for the food industry, key types of construction materials and other production needs.

The rules for improving intersectoral relations within all sectors providing for nutritive sustenance of the populace form merely a basis for improved planned management of economic renewal in food production. All factual problems attendant to the volume of deliveries and the technical level of production needs in relation to the needs of agriculture and of food production could not be dealt with directly. On the other hand, justified norms of consumption, of the requisite production means and their utilization have not been worked out at a level adequate enough for implementing the growth of agricultural and food production with effective expenditure of all forms of social labor.

The substantially more demanding external and internal economic conditions make it imperative that all production assets be used with maximum effectiveness. Deliveries of some production means must be curtailed against the already reached level (particularly propellants and fuels). A higher volume of deliveries is provided for many production assets in relation to the growth of production in the requisite sectors and branches of agriculture and food. However, there is a pressing need for achieving a higher degree of productive utilization and increased productivity of all means of production, be they in-house or provided by contractors.

The most important role in intensification of all sectors of food production, in providing highly productive technologies and the entire complex of utilization of additional production factors is played at present particularly

by the /qualitative level of mechanization and automation of operations in agriculture and in the food industry./ Supplies of mechanized means for agriculture are provided on the basis of the Czechoslovak system of agricultural machinery as well as the system of machinery of CEMA countries in imported types, the development of which was concluded and which were introduced into production in the Sixth and at the otuset of the Seventh 5-Year Plan.

From the total volume of machinery and equipment for the agriculture and food complex in the Seventh 5-Year Plan, the amount of deliveries from branches under the jurisdiction of the departments of the Federal Ministry of Machine Building amount to Kcs 22.01 billion (45 percent). The extent of non-investment type deliveries from these departments for the sector of agriculture and nutrition reached more than Kcs 5 billion in 1980, more than one-half of it formed by replacement parts for tractors and agricultural machinery.

Deliveries of machinery and equipment from individual ministerial departments in the Seventh 5-Year Plan for agriculture and the food industry in shares of total deliveries were implemented as follows (in percentages):

Source	For Agriculture	For the Food Industry
Total deliveries	100	100
Federal Ministry of Metallurgy and Heavy Machine Building	3.6	30.2 13.0
Federal Ministry of Machine Building	56.4	14.0
Federal Ministry of Electrotechnical Industry	2.3	6.9
CSR and SSR Ministries of Agriculture and Food	21.9	26.8
Other domestic suppliers	12.9	
Imports by CSR and SSR ministries of Agriculture and Food from socialist countries	2.5	17.6
from nonsocialist countries	0.4	4.5

The current level of mechanization of agriculture is backed by a wide assortment and volumes of deliveries of machine-type production means. Nevertheless, this extraordinarily important sector is experiencing many problems. The inventory of tractors is not being replenished at the requisite technical level. The average service life of tractors is being exceeded causing increases in consumption of replacement parts, consumption of diesel oil and overall operational costs are high. As part of deliveries stipulated for the Seventh 5-Year Plan as of 1982 the tractors supplied in the assortment composition are the type Z 5011 with two driving axles.

Difficulties are being encountered for the time being in increasing the share of automotive transportation in the interest of lower consumption of diesel oil, higher productivity of labor and more effective utilization of high-performance harvesting machinery. Therefore, efforts are underway in the Seventh 5-Year Plan to change the structure of deliveries, particularly of automobiles over 5 tons, to include superstructures and specialized

agricultural automobiles. Increased deliveries of high-performance loading machines (series UN), dosing transporters and fork-lift trucks are also envisioned.

Machinery deliveries in the Sixth 5-Year Plan failed to provide in adequate volume and assortment the requisite machinery for soil cultivation and sowing, particularly with regard to some types of ploughs, disk harrows, heavy combined and some types of sowing machines. Production of these machines is gradually increasing. The assortment of ploughs for soil loosening, medium and deep ploughing is being expanded. In 1983, production of disk harrows is starting, and in 1984 that of heavy combines. Problems relating to the reliability of sowing and expansion of the assortment of sowing machines are gradually being solved.

In the area of fertilization, increases in the delivery of RMA 8 automotive manure spreaders, and production of trailing spreaders RM 10 for tractors will be launched. Application of mineral fertilizers is done primarily by IFA W 50 LA/Z automotive spreaders from the GDR and tractor spreaders from Poland which, however, call for technical adaptations to improve their performance and a greater uniformity of spreading.

Combines are imported from the GDR and from Romania for the harvesting of cereals. Shortcomings in mechanization of straw harvesting will be dealt with gradually, starting in 1983 by production of stackers on towing tractors Skoda. In the course of 1983 development of straw harvesting by means of baling presses for giant bales will also be concluded.

Mechanization of fodder grass processing is considerably affected by conceptual changes in technologies based on limited sources of heating oils and other fuels. Production and deliveries of machinery for drying of mowings (tedders and buck rakes) are undergoing accelerated expansion. Deliveries of harvesting cutters, self-propelled, towed and rotary mowing and reaping machines are increasing. A unified series of 2 to 4-rotor tedders and buck rakes will be gradually introduced into production in 1983 and 1984. Technological development is working on 6-rotor types. Production of fully mechanized hangar-type haylofts with a capacity of 8,000 cubic meters is being launched.

In spite of the development and introduction into production of various systems for harvesting fodder grasses on sloping sites, it is this sector that poses the greatest problems but, at the same time, it also provides hidden resources in the volume and quality of fodder. In 1983 limited production of high-performance "Kabar" machines for recultivation, tending and harvesting fodder grasses on slopes will be launched, as will that of a mountain tractor with a lowered center of gravity and an output of 50 kilowatts with a cutter bar, a tedder and a buck rake. Other machinery for harvesting fodder grasses on slopes is also undergoing testing. Due to the extraordinary importance of increasing the production of high-quality fodders as the basic proportion to the level of providing nutritive sustenance for the populace in the form of foods derived from animal production, it is the

task of all suppliers of mechanized means for the cultivation of fodder grasses to accelerate and increase the volume of their deliveries and promote their high operational performance.

Mechanized means are being provided in the requisite volume for the cultivation and harvesting of sugar beets. However, their technical level and design are not fully satisfactory in all respects for the time being. The costs of this mechanization are also considerable. Precision sowing machines A-697 do not meet agro-technical requirements in the requisite measure. The service life of KRX-6 cultivation machines is inadequate. High losses and damage to succulent bulbs are sustained during harvesting by KS-6 harvesters. It is therefore imperative to deal with the mentioned problems in mechanization of the cultivation and harvesting of sugar beets on a more conceptual basis, and also in international cooperation, and to provide for technical adaptation of existing machinery.

In the mechanization of potato production, 4 and 6-row planters are at a good technical level. Production of planters will be started under a license arrangement for planting pregerminated potatoes. Harvesting of potatoes is provided for by importation of machinery from CEMA countries. In view of the damage sustained by potatoes, high losses and our more demanding conditions, it will be necessary to reassess the extant technologies and arrange with the technology producers for improvement of mechanized means, particularly for the harvesting of potatoes.

Providing technology for the mechanization of horned cattle raising calls for equipment such as high-performance stationary cutters, silage removers, systems for fodder preparation, lines for fodder distribution and storage and equipment for pasture acreage. The operational reliability and service life of equipment for manure handling must be improved. In the mechanization of hog raising it is imperative to finish development of machinery for the technology of wet feeding (preparation and distribution of wet fodders) and to increase deliveries of washers, crushers and steamers for root crops. This will create the prerequisites for lowering the consumption of high-grade fodders.

Machinery equipment for individual sectors of the food industry is oriented toward modernization, the introduction of new technologies for reducing production costs and demands on energy, limiting losses of biological values and increasing the yield of raw materials. During the Fifth and Sixth 5-Year Plans capital construction, to include machinery and equipment, was preferentially oriented toward the animal production sectors--meat, dairy and poultry industries. Capacities of the meat industry increased by 33 percent, of the dairy industry by 42 percent and those of poultry by twofold.

Capital construction, to include replacement of machinery, in other sectors was carried out to a limited extent, which resulted in an inadequate renewal of worn-out fixed assets. The degree of wear of fixed assets reached approximately 50 percent in 1980, with 61.3 percent in the sugar industry, 58.7 percent in the milling and bakery industry, 57.3 percent in the brewery and malt industry. The share of the machinery pool written off as fully depreciated amounted in 1980 to almost 18 percent.

The situation is particularly unfavorable with regard to power installations. This causes inadequate meeting of capacity norms, breakdowns, excessive fuel consumption, losses in production and unsatisfactory productivity of labor. The existing sugar factories show a twofold energy consumption and more than fourfold lower productivity of favor in comparison with the exported plants.

A not fully satisfactory technological renewal and increases in productivity to promote growth of production is encountered in other sectors, particularly canning, starch, mills and bakeries, brewery and malt, and in the refrigeration industry. In many sectors there are no capacity reserves for handling seasonal peaks, in storage of raw materials and in marketing. In the supply sectors, primarily those under the Federal Ministry of Machine Building and the Federal Ministry of Metallurgy and Heavy Machine Building, it is imperative to create conceptual capacity conditions, including filling and packaging machinery for the individual sectors of the food industry. There is a need for devising a system at the level of the state plan, sectoral plans and plans of economic production units in the system of planning, particularly balancing and distribution of deliveries of comprehensive technological systems and of key machinery. It is imperative to implement in this sector a sense of purpose and an improved level of planning, to achieve within the framework of justified needs and social possibilities a gradual improvement in the extent and higher technological level of capacities of the food industry in keeping with the priorities stipulated for any given periods.

An extraordinary role in the processes of intensification and improving the productivity of agricultural and food production is played by /chemichalization/ of those sectors. The key factor in the intensification of agriculture and providing increasing sources of foods are /industrial fertilizers/. Despite the demanding nature of their procurement, the increases in their deliveries were as follows (in thousands of tons of pure nutrients):

Fertilizers	5-Year Plans 5th	6th	7th	6th / 5th	7th / 6th
Total deliveries	7213.6	8505.4	8643.4	117.9	101.6
of which					
nitrogen	2332.8	3109.3	3240.5	133.3	104.2
phosphorus	1989 3	2341.0	2556.9	117.7	109.2
potash	2891.5	3055.1	2846.0	105.7	93.2

Deliveries of industrial fertilizers per 1 hectare of agricultural land increased in the course of the Fifth and Sixth 5-Year Plans from 178 kg of pure nutrients in 1970 to 257 kg of pure nutrients in 1980, an increase of 44.5 percent. It is envisioned that by 1985 deliveries per 1 hectare of agricultural land will reach 259 kg of pure nutrients, with deliveries of potash fertilizer doses decreasing by 9 kg of pure nutrients due to the already high saturation of soils with potash. Higher consumption of industrial fertilizers per 1 hectare of agricultural land is found in Holland with 341 kg of pure nutrients, Belgium 293 kg pure nutrients, FGR 292 kg pure nutrients, GDR 261 kg pure nutrients. Lower, and often distinctly so,

are deliveries of industrial fertilizers per 1 hectare of agricultural land in some other countries. For example, in Denmark 239 kg pure nutrients, Hungary 226 kg pure nutrients, France 185 kg pure nutrients, Italy 134 kg pure nutrients, Austria 110 kg pure nutrients.

Attainment of a higher resultant intensity of plant production in many of these countries is based on improved utilization of fertilizers derived locally from manure, higher quality of delivered industrial fertilizers and the entire agrotechnical complex from using highly productive seeds to harvesting with minimal losses and high-grade storage of produce.

Deliveries of industrial fertilizers are provided from domestic production of the chemical industry and by imports from socialist and nonsocialist countries. Production of industrial fertilizers is herein fully dependent on importation of initial raw materials and energy (crude oil, natural gas, phosphates, sulfur, potash salt). Due to its energy-intensive nature and limited availability of raw materials, the domestic production of fertilizers has been stagnating, for all practical purposes, ever since 1975, and increments in deliveries were provided primarily by importation of potash and phosphorous fertilizers from the USSR and from nonsocialist countries.

The share of imported nitrogen fertilizers in overall consumption will increase until 1985 to 28 percent as opposed to 9.8 percent in 1975. The share of phosphorous imported fertilizers will increase in the same period from 11 percent to almost 34 percent. Provision of the above-mentioned deliveries of industrial fertilizers is considerably demanding on foreign exchange, primarily due to the import prices of industrial fertilizers and raw materials for their production. It is envisioned that in 1985 the foreign exchange cost for providing industrial fertilizers will double in comparison to the 1975 level. Average import prices for the mentioned period will increase by almost 82 percent.

/With a high dosage volume level of industrial fertilizers there are problems to be solved in their assortment and qualitative composition which do not fully correspond to the level of fertilizers used in countries with most intensive agricultural production. Use is made of a relatively high share of simple superphosphates and a low share of liquid and phosphorous fertilizers on the basis of phosphoric acid (concentrated superphosphates, ammonium phosphates). The physical properties of some fertilizers and the high share of fertilizers packaged in bags (annual costs for bags are estimated at Kcs 300 million) must be viewed as unsatisfactory.

A significant group of deliveries by the chemical industry for agriculture is formed by pesticides. According to scientific research, losses to Czechoslovak agriculture in plant production due to harmful factors amount every year to at least 15 percent, which represents production in the value of Kcs 5.5 billion.

From domestic production and from imports there occurred an increase in the volume of effective substances, /applied preparations for plant protection/

from 7,700 tons in 1970 to 19,000 tons in 1980, which represents an increase by 146 percent, 39 percent of it occurring in the course of the Sixth 5-Year Plan. Domestic production of preparations for plant protection has been stagnating for quite a long time. Its share in deliveries is 40 percent in tonnage and 20 percent in assortments. Also, cooperation with CEMA countries in this sector has not been developing to the required extent. For that reason, a considerable share of deliveries must be covered by importation from nonsocialist countries (roughly 47 percent of the types of preparations). In 1970 Kcs 199 million in fco [all charges paid] prices were expended on importation from nonsocialist countries, in 1980 Kcs 498 million fco and in 1982 almost Kcs 630 million fco, partially also as the result of considerable increases in the price of these preparations. In the current year pesticides were provided through domestic production by the chemical industry on the basis of mostly domestically available effective substances to account for 35.5 percent, 12.3 percent through imports from socialist countries and 52.2 percent through imports from nonsocialist countries. Importation from nonsocialist countries consisted of two-thirds of the effective substances for finishing through domestic chemical production, with savings of approximately 15 percent of foreign exchange costs.

Deliveries of /pesticides/ meet the most pressing needs of agriculture by approximately 70 percent. An urgent task for the chemical industry to expand domestic production, to include cooperation with CEMA countries, and at the same time to create the prerequisites for limiting the high volume of imports from nonsocialist countries. It is also imperative to provide the requisite preparations for preservation of fodders which still do not meet the needs and cause losses of produced fodders and impair their quality.

The chemical and pharmaceutical industry provides for intensification of animal production /biofactor supplements, medicated fodder preparations and veterinary medicines/. These means provide for higher utility, lower consumption of fodders per production unit, lower death rate and improved biological value of foodstuffs. The current state of research, development, production and application of these substances corresponds to worldwide trends. They involve primarily essential amino acids, vitamins, trace elements, macrominerals, stimulative substances, specific veterinary antibiotics, antiparasitic substances and others whose annual production in the pharmaceutical industry alone increased from Kcs 290 million in 1970 to Kcs 1050 million in 1980.

The key problem in this area is making available greater sources of basic raw materials, particularly of methionine, some vitamins, minerals and coccidiostatica to include cooperation with CEMA countries.

The chemical and consumer goods industries provide a substantial extent of other deliveries of production means for agriculture and food production--plastics, synthetic fibers, rubber and rubber products, cellulose and paper, packaging glass and others. In the case of many of these production needs it became necessary to achieve savings in view of the limited sources of raw materials and energy. Even in the remaining years of the Seventh 5-Year Plan it will be necessary to provide for highly effective and economic

management of these means, particularly of all types of tires for automotive vehicles, packaging glass, citric acid, detergents, disinfectants and others.

A significant share in material consumption by agriculture and the food industry is represented by /fuels and energy/ provided by the sector of the chemical, fuel and power industry. The sectors of the agriculture and food complex participated in total direct consumption of fuels and energy in 1980 by approximately 10 percent, 5.6 percent of it for agriculture. These sectors show the following shares for individual types of fuels and energy (in percent):

Fuel/Energy Type	Agricultural and Food Complex	Of which Agriculture
Solid fuels	9.3	2.9
Liquid fuels	22.1	16.9
Gaseous fuels	6.4	2.3
Heat from central sources	2.8	0.9
Electric power	8.7	5.9

Considerable consumption from among liquid fuels involves petroleum, the share of which in total consumption in the republic reached 26.7 percent and that of light heating oil 32.1 percent. The requisite fuels and energy for agricultural production were supplied without any limitations until the end of the Sixth 5-Year Plan. The food industry started management of economic utilization of fuels and energy in the Fifth 5-Year Plan.

On the basis of highly limited sources of fuels and energy, their volumes are strictly limited in the Seventh 5-Year Plan also for agriculture and the food industry, particularly with regard to gaseous and liquid fuels, diesel and heating oil, where it is required to achieve permanently substantial decreases in consumption. The plan for 1982 called for reducing the consumption of diesel oil in the agricultural and food complex by 130,000 tons (by 11.1 percent) in comparison to 1981. On the basis of measures implemented in agriculture, particularly strict regulation on consumption for agricultural operations, the limitations of certain operations and a system of incentives for promoting savings were met in 1982 as planned. The state plan for 1983 and the subsequent years of the Seventh 5-Year Plan calls for achieving additional reductions in the consumption of diesel oil. It is imperative that factual and organizational prerequisites be created for making economy in consumption of diesel oil and other propellants a permanent program that will yield positive economic results for enterprises of the agricultural and food complex as well.

It is necessary to work out programs for economy in consumption also for the overall consumption of fuels and energy in the agricultural and food complex which would provide at individual levels of management the planned savings and improve the level of utilization of these production factors. However, this also calls for simultaneous creation of conditions in material needs of a higher technological level.

Significant production needs of the agricultural and food complex are provided for by the construction sector by /construction operations and

materials/. From the annual volume of construction operations, which amounted to Kcs 11.1 billion in 1982, deliveries by the construction sectors amounted to Kcs 1.15 billion, i.e., 10.4 percent. These deliveries of construction operations were oriented primarily toward structural operations in the food industry, where they cover about 60 percent of construction volume and construction of grain silos, and installations for agricultural supplies and procurement, where they represent around 40-45 percent of the construction volume. A predominant part of construction in agricultural enterprises, maintenance and repair of structures are provided by local agricultural construction organizations and construction groups of agricultural enterprises. The volume of deliveries of construction materials from the construction sector amounted in 1982 to more than Kcs 2.7 billion.

It is imperative to achieve concentration of construction capacities, particularly by construction organizations engaged in building enterprises of the agricultural and food complex, and thus to accelerate progress in the construction and launching of enterprises into operation by the planned deadlines. Materials and structural elements must be provided in high quality so that construction as a whole can attain viable standards, a long service life and technologiaal productivity.

Material needs for providing production of foodstuffs are also provided by practically all other sectors of the national economy. Here, too, there is a need for creating conditions for their constant availability.

In the system of intersectoral relations within the framework of the adopted rules and their further upgrading, it is imperative to /achieve a higher level of intersectoral cooperation, specialization and collaboration/. The organizational structure of the agro-industrial complex must be worked out in closer detail within sectors that participate in production of foodstuffs. There must be active channelling and control of value relations and proportions on the bzsis of material relations to promote higher efficiency of all elements of economic renewal in the production of foodstuffs.

A pressing task is /systematic devising of norms and standards/ for key types of material consumption in agriculture and food production, capacitative and capital appropriations and, thus, optimization of material and value relations among sectors engaged in food production. Active efficiency promoting measures must be constantly worked out to achieve material savings and to promote the effects of research and development on intensification and effectiveness in food production.

It is also imperative to /devise a more integrated program of research and development/ for individual components of the agro-industrial complex for reliable promotion of intensity growth in individual sectors of agricultural production and food production, limitation of all kinds of losses, improved utilization of all production factors and an all-round improvement of production means for growth of productivity in agriculture and food production.

/The solution and creation of the most optimal conditions for reliable growth of the dynamism of agriculture, primarily of plant production and food production, is one of the most important and simultaneously demanding tasks for economic and social development of the CSSR until 1985. Development of the national economy in the demanding conditions of the coming period objectively requires that nutritive sustenance of the populace be provided together with increases in self-sufficiency. This must be systematically implemented as an important task of the stabilizing factor of agriculture and of the entire agro-industrial complex for our economic development./

Attainment of increasing dynamism in intensity of food production, primarily in plant production, calls for the most active utilization of the natural factor of the production process by systematic providing of material and other conditions and prerequisites in all sectors providing nutrition for the populace.

Further improvement of factual, systemic, economic and organizational principles, rules and measures of the system for planned management of agriculture and of all sectors providing nutrition for the populace must be inevitably oriented toward attainment of higher productivity in sectors, particularly in agriculture, by using hidden resources, lowering all types of losses, improved utilization of material inputs and other production factors which constitute a source for growth of food inventories and improved effectiveness of production in this complex of the national economy.

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GENERAL ENGINEERING INDUSTRY RESULTS IN 1983 VIEWED

Prague HOSPODARSKE VOVINY in Czech 9 Sep 83 p 2

[Article by Jiri Poslt, CPCZ Central Committee department deputy director]

[Excerpts] In the first half of this year production in the general engineering industry increased by 5 percent, which is 0.7 percent more than projected by the annual state plan. Attention must continue to be directed above all to the maintenance of the level of plan overfulfillment that has been achieved in the formation of material resources (the production of goods and of values added) and to the bringing into equilibrium of deliveries for domestic commerce as a percentage of the annual plan (Kcs 350 million in retail prices) and in profit formation Kcs 220 million). Likewise, there must be an improvement in the current low level of fulfillment of deliveries of goods for export to nonsocialist countries, especially in all charges paid prices.

Even though at the conclusion of the half year there had been a substantial reduction, in comparison with May figures, in the number of enterprises failing to fulfill the plan for goods produced (from 26 to 10 enterprises), and although the documented shortfall declined by almost 50 percent (from Kcs 114 million to Kcs 60 million), there still remain among these 10 enterprises 7 which have failed to fulfill the plan for some time now. These are Motor in Ceske Budejovice, the Skalica Roller Bearing Plant, the Medzev Strojsmalt Plant, the Hostivar Turning Machine Factories, the Kovosvit Plant at Sezmovo Usti, the Strojsvit Platt at Krnov, and the Melnik Children's Vehicle Factories.

In terms of the production of goods, only the Prague Czechoslovak Automobile Factories VHJ failed to generate a proportional share of the annual plan (49.6 percent). The remaining VHJ all produced goods representing a relatively good percentage of their annual targets. In contrast to this, four VHJ showed low percentage results in adjusted values added: these were the Martin Heavy Engineering Factories (48 percent), the Prague Automobile Factories (48.3 percent), the Prague Engineering Machinery Plants (49.2 percent), and Liberec Elitex (49.7 percent). The main reasons for this were increased productive expenditures for deficits, damages, fines and penalties and, with the exception of Liberec Elitex, also semiannual interest increases, primarily for inventories that were in excess of the standard.

In terms of deliveries for domestic commerce, low percentages of the annual plan were recorded mainly by the Czechoslovak Automobile Factories in Prague (due to priority deliveries of personal cars for export to nonsocialist countries and a low level of realization of automobile imports) and by the Prague Engineering Machinery Plants.

There is an unsatisfactory situation in deliveries of supplementary products for the domestic market. Only four VHJ showed a balanced level of fulfillment for the first half (Prague Aero, the Povazska Bystrica Bearing Production Factories, The Prague Plants for Engineering Machinery, and Liberec Elitex). Two VHJ, the Martin Heavy Engineering Factories and the Brno General Engineering Plants, did not make any deliveries in this area, and the remaining four VHJ (Prague Czechoslovak Automobile Factories, Brno Agrozet, Bratislava Strojsmalt and Prague Prago-Union) provided only a small part of their annual plan target.

The fulfillment of deliveries for export to the socialist countries is favorable, as is the export margin indicator. The sole exception is the Prague Czechoslovak Automobile Factories, where the situation is being affected by delays in the startup of production of the new T 815 truck.

The most serious problem in deliveries for export to nonsocialist countries is the relatively unfavorable degree of attainment of planned all charges paid price targets. This, along with low fulfillment levels of wholesale price targets, is evident especially at Brno Agrozet, Liberec Elitex, and Bratislava Strojsmalt VHJ. A failure to fulfill all charges paid price targets occurred at the Czechoslovak Automobile Factories in Prague Prago-Union. Both the Prague Engineering Machinery Plants and the Brno General Engineering Plants showed low percentage fulfillment, although the margin indicator was favorable at the latter.

Profit target fulfillment for the sector is influenced to a critical extent by the Prague Czechoslovak Automobile Factories and the Martin Heavy Engineering Factories. However, the unfavorable situation is being caused predominantly by the semiannual increase in nonproductive expenditures for fines, penalties, sanctional interest and increased losses due to low quality production, with delayed outputs added to this list in the case of the Prague Czechoslovak Automobile Factories. The above VHJ consider this low level of half year fulfillment to be temporary and expect to be in step with their annual targets by the end of the year.

The Prague Czechoslovak Automobile Factories, the Martin Heavy Engineering Factories, and the Prague Engineering Machinery Plants VHJ all had large amounts of inventory in excess of plan projections at the half-year point. In the first two instances, this is material in warehouses generated by the implementation of new products, while at the Prague Engineering Machinery Plants it is primarily a question of excessive amounts of finished products the shipping of which has not yet occurred at the end of the period. These include subassemblies produced for export in connection with longer term contracts.

Three VHJ did not achieve the planned level of return on production assets (the Prague Heavy Engineering Factories, the Prague Czechoslovak Automobile Factories, and the Prague Engineering Machinery Plants, above all as a result of the failure to reach profit targets and high inventory levels. In view of the fact that production declined during the summer months and, in conjunction with this, quality indicators were also not fulfilled, and since for some VHJ this decline not only lowered the results achieved for the first half but also threatened the entire annual plan, some basic measures were taken.

In all VHJ it is essential to conduct a detailed analysis of the reasons for the threats to the above annual plan targets, and to thrash out at the appropriate organizational levels the means for meeting these targets fully. Even given the overall fulfillment of planned targets, there continually remain in the structure of fulfillment additional shortcomings, mostly of a long-term character.

Much more difficult will be the necessity of assuring the objectives of the final two years of the 5-year plan, with attention directed primarily to the practical application of R&D findings on much shorter schedules than have so far been the rule, to the subordination of the development of the structure of production to planned directions and the requirements of domestic and foreign markets, to the elimination of the unfavorable development of selling prices by increasing the quality and saleability of products, and by speeding up the process of reducing energy intensiveness. It is therefore important to adhere to planned volumes of capital investment and to concentrate on effective investments which promise to yield constructive contributions.

The foregoing means that analyses will have to be conducted of the current fulfillment of state plan objectives for the general engineering sector for 1983 and that measures be implemented which are essential to their consistent fulfillment in the time remaining this year. At the same time it is necessary to strengthen positive trends evident in the current level of development and to overcome in a concentrated manner existing shortcomings and deviations in the fulfillment of plan objectives.

These pressing tasks likewise require a substantial increase in the quality of political work with managerial employees and the technical intelligentsia. The task for party organizations is to see to it that possibilities be created everywhere for the utilization of the abilities and initiatives of workers and technicians.

Where else than right in the midst of the metalworkers is it necessary to assure a positive attitude of party organizations toward the technical intelligentsia in such a way as to value fully and materially and morally support the results of creative work and their role in scientific and technical progress?

Every work collective should set about conducting a critical evaluation of the results achieved to date in the current 5-year plan and define concrete short- and long-term objectives so that efficiency in conjunction with technical development is placed first among work activities.

RATIONALIZING INDUSTRIAL METAL CONSUMPTION PROJECTED

Prague PLANOVANE HOSPODARSTVI in Czech No 8, 1983 pp 39-46

[Article by Oldrich Sklenar, federal minister of general engineering: "Rationalization of Metal Consumption in General Engineering"]

[Text] The rapid rise of world industrial production in the 20th century is generating ever-greater demand for the prospecting, mining, transportation and processing of natural raw materials and supplies. The near and easily accessible deposits of these natural material resources are gradually becoming exhausted, and therefore new and more distant deposits have to be sought to ensure the further development of production. This is succeeding, but only at rising investment and operating costs that are necessarily reflected in the rising procurement prices. Due to the deepening recession in the nonsocialist world and to growing competition, however, product prices at the same time are at a substantially lower level than what would correspond to the prices of the inputs of raw materials and energy into the production process. In sum, all this creates certain external conditions that the national economy must take into consideration.

In the "Principal Directions of the Czechoslovak Socialist Republic's Economic and Social Development in 1981-1985" adopted at the 16th CPCZ Congress, therefore, exceptional emphasis is placed on adding more value to, and using more efficiently, all types of material resources and metals in particular. In drafting the 7th Five-Year Plan, for this very reason, we started out at every level from the reality that the consumption of metals was the principal limiting factor of production. This was not an entirely new problem, rather the considerably changing conditions in seeking sources of raw materials and supplies provided the impetus for including in the system of national economic planning a new factor of economization: the state target program for rationalizing the consumption of metals. In its concept and orientation, this target program affects the main spheres and areas of possible rationalization activities in managing metals. It starts out from the requirement that the decisions for its realization must be regarded as integral parts of the 7th Five-Year Plan. In this context it also sets quantitative target parameters for saving metals and reducing their losses, specifies enumerated drives, and summarizes the means required to ensure them. The point is to reduce the specific consumption of ferrous metals in the decisive branches of the national economy, to better utilize the domestic metal-bearing resources, and especially to increase the collection of ferrous and nonferrous scrap metal, and to reduce the formation of metal scrap in all production operations.

In practice we must achieve in the national economy a situation such that after 1985 the annual output of steelmaking pig iron will not exceed 14 million tons and at least 570 kilograms of scrap will be used to produce a ton of crude steel. Regarding the principal nonferrous metals we plan to maximally curtail their import, and to observe the one-percent limit set for its annual growth.

In this context the program's basic objective for engineering and electronics is to ensure relative savings of 1,040,000 to 1,297,000 tons of ferrous metals and 31,400 to 36,300 tons of nonferrous metals under the 7th Five-Year Plan. Fulfillment of these prescribed savings presupposes an annual reduction of the specific consumption by 4.5 to 5 percent.

The FMVS [Federal Ministry of General Engineering] is playing an important role in fulfilling these basic objectives. A government directive instructed this ministry to ensure under the 7th Five-Year Plan relative savings of at least 525,000 tons of ferrous metals and 23,360 tons of nonferrous metals, with the understanding that further sources and means would have to be sought that would permit maximal overfulfillment of this lower limit. By fulfilling these tasks the FMVS would attain under the 7th Five- Year Plan an annual reduction of 4.6 percent over the preceding year in the specific consumption of metals.

Thus this is a very demanding task. Analyses of the general trend revealed the complex relationships between the consumption of material on the one hand, and the production program's structure, the proportion of standard parts and products, and the efficiency of technological development, investment activity, etc. on the other. We started out from these relationships in setting the objectives that the FMVS must achieve under the 7th Five-Year Plan in rationalizing the consumption of metals. The following relative savings are involved (in thousand tons):

1.	By reducing product weight parallel with starting the production of new products as realization of the technological development plan	228.3
2.	By introducing progressive production technologies in engineering and metallurgy, and implementing the reconstruction and modernization program	110.0
3.	By using nonmetals	20.0
4.	By changing the sectoral structure of production	20.0
5.	By improving product quality	6.0
6.	By reducing scrap	100.0
7.	Through other rationalization activities	73.7

The main rationalization drives--the enumerated drives monitored by the program coordinator, the FMVS, the economic production unit and the enterprise; and the minor rationalization drives monitored by the enterprise and the plant--were aimed at achieving these savings.

1. Reduction of Product Weight and Start of the Production of New Products As Realization of the Technological Development Plan

Savings of metals are ensured in this area especially through the R & D plan. Within its framework, savings of 221,100 tons of ferrous metals and 7,200 tons of nonferrous metals are expected under the 7th Five-Year Plan. These savings correspond respectively to 40.7 and 31.0 percent of the minimum limit. The

above approximate estimate is based on the increase in production volume gained by applying to practice the results of the R & D plan's tasks, parallel with a reduction of the specific consumption of metals and the projection of the proportion of savings into the total output of goods.

In spite of the relatively large volume of metal saved through product innovation under the 7th Five-Year Plan, certain reserves still remain in this area, because our products typically are still too heavy, and on the world market the relative shortage is growing of truly top-level engineering products that incorporate the latests advances in science and research and the results of the innovation processes, especially in terms of utility characteristics and efficiency of operation.

2. Introduction of Progressive Production Technologies in Engineering and Metallurgy, and Implementation of the Reconstruction and Modernization Program

Rationalization schemes in the area of engineering's production technology start out predominantly from the reconstruction and modernization program. Of the 104 drives included in this program, 66 are aimed at saving metal. The following savings are expected within the framework of this program under the 7th and 8th Five-Year Plans:

	Drives (Number)	Metal saved (1000 tons) Ferrous	Nonferrous
7th Five-Year Plan	39	28.2	1.7
8th Five-Year Plan	27	27.8	1.1
Jointly	66	56.0	2.8

Further reserves for saving metals in this area lie in the optimal utilization of the already solved R & D tasks involving progressive production technologies, primarily through their repeated introduction, specifically:

--In founding where it is necessary to concentrate on casting into molds made of mixtures with controlled stiffening, on the methods of precision casting, and on the methods of batch technology for making castings;

--In forming, by employing three-dimensional hot and cold forming, precision forging and cutting;

--In welding, through the wider use of welding in a protective atmosphere;

--In machining, through the wider use of nonconventional methods of machining;

--In expanding the production of parts by powder metallurgy, where it is realistic to expect savings of about 50,000 to 70,000 tons of ferrous metals under the 7th Five-Year Plan.

The expected savings of about 110,000 tons of metals represent nearly 20 percent of the lower limit of savings. Within the framework of capital construction under the 7th Five-Year Plan, moreover, new capacities will be placed in operation in engineering metallurgy where savings of about 62,000 tons are expected from castings of gray and nodular cast iron, and from die forging.

3. Use of Nonmetals

The increasing proportion of plastics used in engineering in the industrially developed countries is a worldwide trend. It is estimated than in 1985 the share of plastics will be 8 to 12 percent of the total consumption of structural materials.

Within the FMVS the consumption of plastics was reduced in 1980 to 90,000 tons, including semifinished products, i.e., to about 3.5 percent of the tota' consumption of metals. Of this amount about 12,600 tons was used for products whose original or comparable models were made of metal.

Under the 7th Five-Year Plan it is essential to ensure by 1985 an increase of about 16,500 tons in the production of parts made of plastics, which will save approximately 20,000 tons of metal. This assumption conflicts with the State Planning Commission's directive that the consumption of engineering plastics in general engineering must not increase by more than 1 percent, because every ton of plastics corresponds to about 2.5 tons of imported petroleum as input into the chemical industry. Therefore ways and means must be sought to make the present consumption of plastics more efficient, the Czechoslovak-made plastics more useful, and also to use plastics recycled from scrap, especially from PVC scrap.

4. Change of Sectoral Structure

Analysis of the effects of changes in the sectoral structure of commodity production established that about 20,000 tons of metal can be saved under the 7th Five-Year Plan as a result of the growth rate of production in certain sectors (cars, ships, steel transport containers, heating and cooking installations, etc.).

The relatively modest savings due to changes in the sectoral structure of production indicate that material intensity has not yet become one of the main considerations in preparing production plans at every level of management.

5. Improvement of Product Quality

The available reserves for saving metal in this area exist particularly in reducing the percentage of rejects. The 7th Five-Year Plan anticipates that internal and external rejects in commodity production will drop respectively by 0.15 and 0.13 percent. This should save annually about 1,130,000 to 1,200,000 tons of ferrous metals and about 54,000 to 62,000 tons of nonferrous metals.

6. Reduction and Management of Scrap

The present volume of scrap within the ministry is about 992,000 tons of steel and cast-iron scrap, which is approximately 31 percent of the consumed material. Analyses of the utilization of metals under the 6th Five-Year Plan show that the lowest percentage of utilization (without the remelted scrap) is in foundries, 64.8 percent; it is around 67 percent in forging and stamping, and 71 percent in engineering plants. A negative phenomenon is the fact that under the 6th Five-Year Plan the percentage of metal utilization remained practically unchanged. At an improvement of 1.5 to 2 points in the initial metal's percentage of utilization, the potential savings in this area are 18,000 to 20,000 tons a year or 80,000 to 100,000 tons in 5 years.

The economic production units, enterprises, plants and departments must devote more attention to this problem, in their R & D plans as well as in their design and technology audits, in the technical preparation of production, in cutting stock and sheet to size, and especially in projecting this problem into objectivized technical and economic consumption norms.

7. Other Rationalization Activities Contributing to Saving Metal

Other rationalization activities include particularly the workers' initiative, the invention and innovation movement, and socialist competition to save metal. Much is expected of the fulfillment of the "Program for the Planned Development of Inventions and Innovation Proposals to Ensure R & D and Production Within the FMVS in 1981-1985," which is expected to save about 74,000 tons. Added to this is the statewide competition "To Save Metals, Raw Materials and Supplies," announced by the FMVS in cooperation with the other ministries and social organizations. Their purpose is to stimulate the workers' initiative at every level of the economy to save metal.

Fulfillment of Program for Rationalizing Consumption of Metals

In 1981 general engineering fulfilled the tasks set for relative savings of ferrous and nonferrous metals. In last year's implementation plan the ministry prescribed for its subordinate economic production units savings that fully ensured fulfillment of the rationalization program. In addition, pursuant to a resolution of the federal government's presidium and to the resolutions adopted at the 10th Congress of Trade Unions organized by the Central Council of Trade Unions, the ministry pledged to increased the targeted savings by 0.5 percent. The results achieved are very gratifying. The planned savings of ferrous metals were fulfilled 122.3 percent; and of nonferrous metals, 212.7 percent. Overfulfillment of the planned savings reduced specific consumption by 5.4 percent in the case of ferrous metals, and by 4.7 percent for nonferrous metals. The shares of the individual activities in the mentioned 1982 results were evaluated as follows:

--Realization of the technological development plan, by reducing product weight, starting the production of new products, and introducing progressive production technologies in engineering and metallurgy, 46 percent;

--Use of nonmetals, 12 percent;

--Change of the sectoral structure, 5 percent;

--Improvement of product quality, 3 percent;

--Reduction of scrap, including enforcement of consumption norms, 9 percent;

--Other rationalization activities (workers' initiative, inventions and innovations proposals, special tasks, technical and organizational measures, socialist competition, etc.), 25 percent.

Reduced consumption of ferrous and nonferrous metals, parallel with an increase of 3.7 percentage points in the output of commodities, had a favorable effect

on the decline of specific consumption. The attained growth rate of savings is in accord with the conclusions of the 16th CPCZ Congress and the federal government's pertinent resolutions. The basic documents for systematically uncovering reserves are the partial programs for rationalizing the consumption of metals that the individual economic production units prepare and periodically update, and the refined concept of production's sectoral structure. These documents are discussed at, among other things, the regular coordination conferences for officials of the economic production units, held at least twice a year. The workers' initiative is likewise being utilized adequately.

The tasks for 1983 have been ensured by breaking them down as "mandatory tasks of the state plan." In addition there are the savings resulting from the workers' initiative within the framework of raising the planned savings by 0.5 percent, designated as a "reference indicator of the economic plan." Present practice confirms that it is no longer possible to solve the tasks of rationalizing the consumption of metals in a narrower sense, i.e., merely in the form of minor rationalization measures. This problem is of a far more complex nature, and its solution must be directed toward phases of the research-development-production-use cycle. The point in particular is the research and development of progressive structural materials; substitution of new materials for conventional ones wherever this is expedient and feasible; development and application of progressive technologies, especially of waste-free technologies; development of machinery and equipment that are material-saving in their conception and design; structural changes in the production programs in favor of less material-intensive products and products with much value added to the metal; improvement of the recycling process to increase the degree of the scrap metal's utilization, etc.

An essential condition for rationalizing the consumption of metals is also improvement of the direct and indirect instruments of management. This involves particularly perfection of the methods and forms of planning so that the basic tasks and measures leading to the better utilization of metals within the FMVS may be ensured through planning decisions. Attainment of a significant decline in the specific consumption of metals, in harmony with the application of a perfected management system, requires also a basic improvement in working with material consumption norms that must reflect and ensure the contributions of research and development, the experience of the creative and economic officials, inventors, innovators, and socialist labor brigades. The consumption norms set progressively in this manner must be used consistently in the entire planning process, and primarily in the area of costing and in the supply of materials and equipment. In accordance with the tasks that the minister of general engineering set in his measure No 42/79, by 1985 at least 85 percent of the planned consumption of materials within the FMVS will be based on substantiated norms that will serve to upgrade the drafting and breakdown of the plan and the monitoring of its fulfillment.

A stricter regime of setting and observing norms for the consumption of raw materials and supplies is of exceptional importance in the process of management because it is a basic prerequisite for the following:

--Application of an effective system for managing the material inputs into production and properly evaluating the results of its rationalization;

--Improving the plan for the supply of materials and equipment at every level of management;

--Better inventory management, especially to avoid tying up material resources in unused inventories;

--Intensification of the enterprises' internal khozraschet, more equitable remuneration, and the organization and evaluation of socialist competitions for savings in consumption;

--Costing and pricing;

--Construction of structural balances of interproduct, intersectoral and interbranch relations;

--Efficient use of computers in materials management, and their more efficient use in management in general.

In view of the exceptional importance of tighter norms, the attention that the party and state economic organs are devoting to this area of management is not only a logical reflection of cognizing the external conditions and internal requirements of the economy's development, but it also starts out from cognition of the development to date and the state of the domestic conditions for ensuring the supply of materials.

Efficient management of metals demands the uncovering of all reserves as soon as possible. The main ways of significantly improving the management of metals under the 7th Five-Year Plan must be sought primarily in the following:

a. In accelerating the realization of all R & D tasks, in supporting the invention and innovation movement, in disseminating the most progressive experience of the best blue-collar workers, and in directing the socialist competitions and the rationalization movement toward the following objectives:

   Reduction of the material intensity of production, and higher utilization of the consumed raw materials and supplies in the products;

   Reduction of the proportion of imported raw materials and supplies per unit of product;

   Increased proportion of recycled materials, at the expense of the consumption of primary resources;

   Improvement of product quality and longer service life;

   Perfection of production technologies, and elimination of avoidable losses;

   Better workmanship and elimination of nontechnological losses (losses resulting from disorder, negligence, etc.);

b. In purposefully realized changes in the production structure, aimed at increasing the proportion of products relatively less material-intensive than

the present average, primarily through product innovation while retaining or improving the utility value of the products;

c. In introducing order into the entire system of materials management, which ties in directly with strengthening technological discipline, improving quality, and increasing consistency and thoroughness in the management of this entire area.

These are very demanding tasks because, in comparison with the work routine up to now, they represent a significant change in the mentality of all workers who have long become accustomed to fulfilling extensive volume indicators, and to the management system and style of work geared to such fulfillment. This is confirmed also by the experience in the GDR where the material reserves uncovered in the organization and control of materials management are practically sufficient to cover for about two years the additional material resources required for increased performance; a further rise in performance, without any additional material resources, must be ensured by research and development, and through technological rationalization of all types of consumption.

Under the present conditions of the Czechoslovak economy's development, the primary source of reserves is first of all the introduction of order into the entire system of materials management, which is directly related to the quality of its management. Therefore a proposal has been prepared on complete systems for managing the rational use of metals in all the necessary interrelations, including methods for evaluating the savings in the individual sectors and organizations of the national economy. The purpose of this proposal is to guide and coordinate, in accordance with the needs of the national economy, the decisive functions and rationalization activities that in the final outcome lead to uncovering and mobilizing reserves in the following principal directions:

a. Gaining metals from scrap and nonconventional secondary raw materials;

b. Minimizing scrap and losses arising in the production and processing of metals, primarily by reducing nonrecoverable losses, and through the better recycling of scrap in the metallurgical processes or for further use;

c. Maximum feasible utilization of metals and of their technical parameters to reduce product weight;

d. Possible substitution of nonmetals for metals, by taking advantage of new properties of nonmetals (structural, technological, anticorrosive, etc. properties) or as simple substitution;

e. Optimal passage of fixed assets (machinery and equipment) through their technical and economic service life, and the extension of their technical and economic usefulness

Through expedient repairs, maintenance and renovation of parts or subassemblies, which extend their service life and thereby reduce the demand for new machinery and equipment, and hence also for the metal necessary to build them;

Acquiring scrap (depreciated scrap metal) by scrapping products (machinery and equipment) and from their operation, and recycling the scrap in the

metallurgical process, which is closely related also to accelerating the circulation of our country's metal assets;

f. Utilizing the possibilities inherent in changing the product mix (structure) of production (or of the production programs) from the viewpoint of its material intensity, and giving preference to the development of production that is less metal-intensive.

The state target program remains the basic program document, and simultaneously also the instrument that integrates the rationalization activity of the individual subjects in entirely specific form and with a target program's definiteness. On the basis of the experience to date, we expect that for the 8th Five-Year Plan the target program will be drafted on a qualitatively higher level, primarily in conjunction with the long-range comprehensive programs aimed at solving the principal directions of the structural and qualitative changes and chosen objectives, in their interdisciplinary and intersectoral relations.

An integral part of the system for managing the rational use of metals is a draft of methodological instructions for calculating and evaluating the savings of metal. The objective of the draft, prepared on the basis of the experience to date, is twofold:

--To maximally unify the methodological approach to calculating and evaluating the savings of metals; and

--To objectivize the calculation and evaluation of the savings of metal, in all their interrelations.

In addition, a uniform conception of the consumption of ferrous and nonferrous metals was defined and directly linked to the nationally balanced items, which is directly contingent on consistently strengthening and intensifying the enterprises' internal khozraschet. This cannot be imagined without a system of properly set, dynamic and progressive, regularly reviewed and amended, and technically and economically substantiated material consumption norms, and of consumption indicators derived from such norms.

After the federal government discusses and reconciles the system of managing the state target program for rationalizing the consumption of metals, together with the methods for reporting savings, the FMVS will draft its own management system. After approval within the ministry's collegium, the management system will be issued to the economic production units as a regulation.

Intensification of the rational management of metals will continue also under the 8th Five-Year Plan. This will be combined with a qualitatively higher and more comprehensive solution of a series of technical, organizational and economic questions of a cross-sectional nature, ranging from research and development, through the production process itself, to use. The concept of the target program in the area of rationalizing the consumption of metals will remain that of an open-ended program whose objectives will be precisioned and supplemented each year. The annual reduction of the specific consumption in the production process is expected to be 3.8 to 4 percent for ferrous metals

and 2.2 to 2.8 percent for nonferrous metals. It will be ensured primarily by reducing product weight, starting up the production of new products, introducing progressive production technologies in engineering and metallurgy, changing the sectoral and product structures, and through the other rationalization activities, including the workers' initiative.

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COOPERATION SAID NEEDED FOR EFFICIENT FOOD PRODUCTION

Prague HOSPODARSKE NOVINY in Slovak 9 Sep 83 pp 8-9

[Article by Engineer Jan Janovic, SSR minister of agriculture and food: "Toward Efficient Food-Production Systems; Active Cooperation of All Branches Is Decisive"]

[Text] It is not self-evident that the area of agriculture has become suitable for new equipment and technology, and that literally with each year there appear ever-newer elements of work, items of equipment, and economic experiments, in spite of the traditional conservatism of this branch of the national economy. Penetration of already proven technological forms into the food industry is so rapid that in the first period this process could not be mastered, and it encountered a lack of understanding and a low educational level, not only of the basic workers but also of secondary-school graduates and engineering cadres.

The multitude of problems stemming from ensuring production each year, in spite of the migration of two-thirds of the manpower to industry and other branches of the economy, meant the dissipation of the technological inputs and their isolation. Today the other branches of material production are supplying about 70 percent of farm production's inputs in value terms, and this has created an entirely new situation in organizing the use of these inputs and in terms of technological discipline. Efficient use of machinery and equipment, maintenance and repair capacities, chemicals, and of the other branches' multitude of inventions and innovations applicable to the food industry, and also the need to realize practically the entire output in the form of final products tastefully packaged and placed on the market on schedule--all this compels us to develop synchronized systems for the production of food-industry raw materials and consumer goods, beginning with the inputs from other branches, through the value added by the food industry's own workers and production assets, to their sale in the market. Food production is one of the most complex areas of the socialist economy.

New Conditions of Large-Scale Production

Therefore the problems of developing agriculture and of fulfilling the planned tasks in this basic branch of material production are receiving the systematic attention of the highest organs within our society. The significance of food production has increased in recent years. This can be attributed mainly to the

general worsening of the conditions for obtaining from abroad foods, food-industry raw materials and raw materials in general, and by no means last to the situation in the world market for fuels and energy. From proclaiming the need for self-sufficiency in food supply and in the supply of grain in particular, we are already switching to ensuring this task through a comprehensive program that includes research and development, and especially the supply of materials and equipment, and organizational systems of realization.

The comprehensiveness and programmed nature of the mentioned strategic and long-range task's realization are in the expansion of the scope of self-sufficiency, from the originally narrow and often isolated perception of the grain program, and subsequently also of the protein program, to entire crop production and, linked to it, to entire livestock production as well. More than heretofore in the case of structural changes and economically warranted intensification of production, we are accepting also the area of economical consumption: of basic raw materials, intermediate products, and products for final demand that satisfy the population's needs. Prevention of all types of losses, in terms of both the quantity and quality of the raw materials and finished products, also plays a role here.

It will be increasingly difficult to ensure this task. On a world scale, however, Czechoslovak agriculture belongs in the category of developed and intensive agricultural systems, and we still have sufficient room for increasing further its yields, primarily by purposefully directing the intensification of large-scale farming based on the industrialization of agriculture, with all its technological as well as economic and social consequences.

We have entered a stage in which the industrialization of farm production and the entire process of agriculture's intensification cannot be achieved with the present, often obsolete, agronomical and zootechnical methods. For there still exists considerable unevenness in the technical and technological equipment of the individual stages in the production cycle of given final product, and also in production in general. The existence of disproportions in the equipment of agriculture has its negative economic effects. The time lag and uneven progress of agriculture's industrialization are one of the factors that make farm production expensive.

A favorable economic impact on production can be ensured only through the proportional effect of all the factors of industrialization, within a certain comprehensive system. This is confirmed by the results in several economically developed countries. In an effort to support and accelerate the progressive forms of agriculture's industrialization, therefore, the leadership of the SSR Ministry of Agriculture and Food gathered all the foreign and domestic information on this subject, and in 1982 it ensured the elaboration of technological systems for practically every branch of crop and livestock production, and for all types of crops, including vegetables, fruits and grapes. This involves the elaboration of comprehensive systems of obligatory norms and standards, compliance with which in agricultural practice will gradually become mandatory in agriculture for all farms, service enterprises and the appropriate managing organs.

Through the gradual realization of the mentioned systems and their perfection, we are changing over to scientifically managed crop and livestock production,

which naturally presupposes certain changes and adjustments in planning along the entire axis of management and in the organization of the production assets base. It presupposes changes also in the training of people, not only of the managers overseeing the enterprises, but also of the agronomists, zootechnicians, farm mechanization experts, economists, production technologists and ordinary production workers. The crop-production systems will include the activity of productive and nonproductive services, and of the appropriate supplier branches. They will be expected first of all to adjust in due time to the approved technological systems and to significantly improve their services and deliveries of production assets for farming. For crop production is the typical area where higher efficiency requires integrated intensification not only of the cultivation of the crops but of their utilization as well. Thus even our elaborated systems could miss their mark if all the factors required for industrialization are not available in every phase and in the necessary linkages, decision regarding which are now being made by the supplier branches, processing industry, and services.

The practical application of the technological systems is a very demanding task for our entire national economy, and primarily for agriculture. Since complex questions are involved, this can be only a gradual process, in agreement with what the economy can afford and with the state of the organizational preparations, so that by 1985 the technological systems may be employed on about 50 percent of the total acreage of farmland in the Slovak Socialist Republic.

The entire growth in the gross output of crop production has been achieved exclusively through intensification of production. However, there has been considerable differentiation by crops. While the grain harvest has increased severalfold during the mentioned period, the increase in bulk fodder has been moderate or about one-third, the sugar-beet harvest has increased by about one-half, and the harvests of industrial crops, pulses, vegetables and fruits have fluctuated considerably. In southern Slovakia, for example, yields of densely sown grain in Dunjaska Streda Okres have increased threefold over the prewar period, from 1.4 to 1.7 tons/hectare to about 6 tons, for example, in 1983. The same is true of the corn yield, although in the case of this crop we have not yet been able to maintain year after year its high production potential, and the corn harvest varies in accordance with the climatic factors. The attained large-acreage yields of 8 to 10 tons per hectare, and the possibility of growing a second crop of corn (an early hybrid) for grain or at least good silage, after [grain and leguminous fodder] mixtures or rapeseed, make the further intensification of crop production promising.

External economic relations have rapidly worsened particularly during the past decade, to the detriment of our national economy as a whole. The entire branch of food production has found itself in an entirely new situation. Certain internal shortcomings have begun to appear within food production itself. If we add to this the years of bad weather, all this has caused stagnation, in crop production in particular. Already 1982 was a warning, and especially 1983 when, thanks particularly to good bulk-fodder and grain harvests, we were able to alleviate the unfavorable foreign effects and coordinate entire livestock production with the possibilities of crop production. In spite of this, we are still experiencing that especially the uneven equipping of agriculture with the means for its intensification is hampering growth of the marketable output.

Optimization of the Factors of Intensity

Sources of energy are becoming limited, and it has even become necessary to partially convert the technology base to make it less energy-intensive. Signs of a slowdown of the growth rate in crop production could indicate that in some instances we have approached maximum productivity under the given conditions. Science and applied research are to free the way for further progress in intensification. The process of research and development will enable us master additional, presently still uncontrollable factors that could restore the one-time flexibility of maximum yields and permit further growth of production. Perhaps this applies only to some of our top socialist agricultural enterprises with a high production intensity. From the viewpoint of the need to further increase the volume of our farm output and to improve the efficiency of farm production, however, our main problems lie elsewhere. They concern the principle of maintaining the proportionality of the factors of farm production's development. In general the principle of proportionality among the factors of development means that the possibilities of any system can be fully utilized only if all the factors are ensured that are necessary for the development of a related system.

Decisive at present is to develop such methods of using society's production assets, and of combining them with the immediate producers in the process of production, that will ensure the continuous and most rapid rise of the productive forces. For there exists a close relationship between the development of the productive forces and of the production relations. The room that the concentrations established within the framework of cooperation provide for the development of the productive forces cannot be arbitrary but must approximate the optimum as closely as possible. It seems that in our economic policy we often forget the principle of optimum in the relationship between the productive forces and production relations, and we often expose ourselves to the danger of creating higher concentrations than what is expedient under the existing conditions. Efforts to create the maximum, and not the optimal, room for the development of the productive forces necessarily lead to disproportions. And the economy has to pay dearly for any disproportions.

During the period of agriculture's industrialization, therefore, the principle unambiguously applies that the process of making production cheaper can occur only when the new elements of industrialization are formed in suitable proportions into a complete system, in which the functioning of all elements is sufficiently comprehensive. In view of the inevitable spatial technological and organizational link between the branches or their technological stages, the parallel existence of industrialized and traditional branches of production, or even of traditionally organized production stages, necessarily leads to a loss of the gain achieved in the industrialized stages of the reproduction cycle.

Under the conditions of traditional agriculture, emphasis in intensification was on increasing the output per unit of acreage, completely in accord with the closed and agricultural nature of the economy. Under the conditions of intensifying division of labor, and of developing cooperation and integration in agriculture with the other national economies, this primary intensification is expanded and continued into secondary intensification that extends to all stages of reproduction, including the final consumption of the food produced.

This seemingly methodological question is of great practical significance for our agriculture.

Changes in human nutrition, with the growing consumption of meat and meat products and with an ever-higher degree of processing farm products, are reflected in a rising trend of losses in the processing of harvested crops. Thus in countries where the per capita daily consumption is 12,000 joules and per capita annual meat consumption is over 80 kilograms, for example, four times as many joules per person and day must be produced in crop production in order to maintain this level of supply. From the viewpoint of the primary raw materials, then, there arises here a situation entirely different than in the other branches of the national economy. With the rising consumption of meat and meat products, production does not become more economical of raw materials, but more material-intensive with a declining trend of efficiency. Thus secondary intensification plays an increasingly important role in agriculture, and it must be organically combined with the primary form of agriculture's intensification in order to multiply its effect.

We Want Efficient Intensification

Farm production has been, is and will be an immensely complex process, in the same way as biology itself is complex under the external environment's uncontrolled conditions. With his knowledge and material resources, man is able to intervene in this process very effectively. But the higher the requirements and demands, the greater must be our knowledge and the more effective our material resources

In the present stage we have reached the critical point in the growth of intensity, and also stagnation has appeared. Restoration of the growth rate will inevitably require the application of new knowledge and material resources, the effect of which will restore growth in the direction of efficient intensification. In this context it is especially important for us to clarify what the intensive model of crop production is like that we wish to achieve.

In the sense of the social objectives to achieve self-sufficiency in the farm products for which we have suitable soil and climatic conditions, we characterize an efficient intensive model of crop production as one under which we are able to achieve grain yields of 6 or 7 tons per hectare, and between 9 and 11 tons of dry matter in crops intended for feeding.

Intensive crop production characterized by stable high yields is based on a number of limiting factors whose influence is comprehensive and unique. These factors are as follows:

--The soil and its potential fertility;
--Highly productive biological material;
--Quality seeds and plantings;
--Adequate manufactured and organic fertilizers;
--Adequate supply of effective plant protectants against weeds, diseases and pests;
--Adequate supply of good-quality and efficient farm machinery, vehicles, and equipment for the processing of harvested crops; and
--Controllable water regime.

Under our conditions, weather dominates all the aforementioned factors; it can be utilized, and its unfavorable effects gradually eliminated, only by purposefully regulating these factors. Neglecting any factor would mean curtailment of the set targets and objectives.

Systems Approach Must Be Perfected

For a changeover to more intensive production and higher productivity in farming it is necessary to accelerate technological progress in the area of farm mechanization, primarily by increasing the performance of the individual lines of machinery, improving their operational reliability; by changing the structure of farm machinery, in favor of more powerful tractors and self-propelled machines; and by completing the comprehensive mechanization of all operations. To overcome the present stagnation in the area of farm equipment it is necessary to catch up with the world development in this field, referred to already as the third generation of farm machinery with the following parameters:

--Tractor motors rated at 140 to 350 kW;
--Operating speed of the units in the field 15 to 20 km/h;
--Vehicle load capacity 13 to 20 tons in accordance with the intended use, and travel speed of 50-60 km/h;
--Comprehensive coordination of the performance parameters of the individual units in the technological line and in the receiving lines; and
--Combination of the work operations.

In tillage it is necessary to change over to disk plows, to plows that turn the fertilizers under and prepare the seed bed in one pass, and to combined machines of increased operating speed. In the area of planting and sowing we must introduce self-propelled machines with combined use for sowing, cultivation and thinning; and must solve the automatic control of the machines' movement, the control and depth of sowing, and the density of the seedlings in thinning. In harvesting machinery we must continue the transition to powerful self-propelled machines with a capacity of 18 kg/sec in grain harvesting, using indicators, signals and automatic control of the working members. The technological lines for harvesting grain and shelled corn must be equipped so that the required volume of straw and cornstalk will be available for feeding. In this context it will be necessary to establish so-called straw-processing buildings, with provisions for the mechanical, thermal and chemical processing of the straw to make it suitable for feeding. The lines for making pelletized feed, and the structures for the preparation and mixing of bulk fodder must be perfected, comprehensively mechanized and automated.

Primary attention has to be devoted to reorganizing farm transportation, using modern motor vehicles and suitable special-purpose bodies, including equipment for materials handling. In the long run we will have to employ a unified system of containers for transporting not only farm products, but also materials and products supplied to agriculture.

Terrain conditions in Slovakia demand that we devote more attention to mechanizing farm chores in mountainous and piedmont regions. We must achieve complete mechanization also in the cultivation, harvesting and processing of vegetables, fruits, grapes and other special crops, and to create thereby the

conditions for the faster concentration and specialization of their production. It is also necessary to complete the mechanization of the cultivation, harvesting and after-harvest processing of pulses, oil seeds, industrial crops, and the mechanization of plant breeding and seed reproduction.

Keeping farm machinery in operating condition requires a three-stage system of repairs. Therefore we will devote attention to completing and expanding the sevicing-and-repair centers and the diagnostic-and-repair centers. In accordance with the approved principal directions for the development of the STS [machine and tractor stations] and OPS [Agricultural Machinery Repair Shops, National Enterprise], it is necessary to complete the establishment of a comprehensive system for the care of farm machinery, based on expedient division of labor between the users of farm machinery and the enterprises providing repair services.

We have to place in operation also an expedient system for the supply of spare parts, which will support the development of the concentration of specialized repair services at the third stage within the system of repairs.

Biotechnological systems represent the best possible solutions in seed production, and in the cultivation, harvesting and post-harvest processing of crops. This involves combined inputs of labor and materials that ensure optimal yields, but requires strict cultivation discipline and especially the optimization of production assets and labor costs. The ratio of costs to harvest becomes the basic yardstick for the economic assessment of the overall organization of crop production. On the one hand we want to harvest as much as possible, but on the other hand the costs rise incommensurately faster with higher yields. These two factors must be adjusted to find the optimum.

A summary quantification of the reserves and losses that exist in Slovakia alone indicates that through stricter technological discipline in crop production in the SSR we can prevent losses totaling nearly 175 million korunas. However, there are even more significant reserves in the untapped genetic potential of individual plant varieties and livestock breeds, because optimal machinery, plant protectants, and agrotechnical and fertilization methods corresponding to the latest technical level are not being employed. And especially because the sum total of the measures influencing yields is not comprehensive and does not correspond to the optimal biological level. And then we often attribute these consequences simply to subjective factors, but they stem from a noncomprehensive and nonunified system of inputs into farm production. We must likewise achieve synchronization of the production of raw materials and of their timely processing, and of the optimal transportation distances already on the farms themselves. Every input into production must be proportional to the other inputs, for only in this way will we obtain the total effect of the inputs and, in the final outcome, also the planned yields.

Scientific institutions of the Slovak Academy of Sciences and of the ministries have been assigned the task of reviewing the land fund's present use and of precisioning the comprehensive ecological zoning of the territory, from the viewpoint of using land the most efficiently to grow food. We will devote special attention to increasing soil fertility, because the land fund's natural quality differs considerably, in accordance with the diverse climatic and natural conditions in the SSR.

For the simple restoration of soil fertility we will choose approaches and employ systems of soil management such that will prevent the squandering and deterioration of soil fertility. We wish to achieve this particularly through the wider application of biotechnological systems.

The need has arisen to elaborate a new general scheme for the overall solution for the use of water resources in the SSR, with special attention to saving water. The general scheme must include the construction of additional reservoirs and aquaducts particularly in the Zahori region, on the Danube plain in general, in the southern portions of Zvolen, Lucenec and Rimavska Sobota okreses, and on the East Slovakia plain. For high yields it has become an objective necessity to have available during the vegetation period an adequate supply not only of rain water but also of additional water for irrigation.

The built reservoirs and distribution canals will have to be combined with the more intensive construction of irrigation systems, using the latest irrigation equipment. Irrigation systems of the Fregat and Dnepr types have proven the most suitable because they permit semiautomatic operation and are able to irrigate crops with high stalks, particularly corn. For the irrigation of orchards we regard as essential to begin series production of equipment for drip irrigation and injection irrigation that use water very efficiently.

In the coming years we must definitely solve the problem of soil acidity and mineral deficiency. An area of about 500,000 hectares of the most acid soils will have to be treated in each of the next three years with 10 tons of lime per hectare, and in the next two years it will be necessary to apply each year at least 2 or 3 tons per hectare to keep the soil neutral. Liming has become the basic factor of the fertility of most soils and it has to be incorporated permanently in the biotechnological systems of crop production. We have an abundance of lime-containing materials. For the comprehensive solution of liming, however, the Ministry of General Engineering must produce the equipment necessary for applying the lime, tank trucks, and RAJ type railroad cars for transportation. From the chemical industry we require increased deliveries of phosphorus and potassium. About 600,000 hectares are deficient in phosphorus, and approximately 200,000 hectares are deficient in potassium.

The high percentage of heavy, nonaerated and less fertile soils, especially on the East Slovakia plain, necessitates that we undertake the radical improvement of both the air and water regimes of the soil. Engineering will have to manufacture and supply special plows with which the soil can be aerated to a depth of 60 to 70 cm, and also subsoil plows. The previous orientation on importing such special machinery has been unsuccessful, and therefore about 200,000 hectares are producing low yields.

However, the comprehensive systems approach to restoring the dynamic growth of soil fertility must include also care for the soil's organic matter content, in unavoidable context with the increasing doses of manufactured fertilizers used. To treat at least 25 percent of the acreage of arable land with organic manure requires a variety of measures, but especially an increase of the cattle density to a basic and minimal level of 75 head per 100 hectares of farmland, and also the use of all local organic wastes, tree bark, peat, etc. At present the cattle density in the SSR is only 55 head per 100 hectares, as compared with 75 head in the CSR.

The new industrial complexes for livestock production operate without bedding straw and therefore collect liquid manure. To get this liquid manure into the soil we need a complete system of machinery such as separators, sludge pumps, special tank trucks, and combined tillage tools for the direct placement of the liquid manure. Solution of this problem requires transporting each year huge volumes of organic manure. From general engineering we request the comprehensive production of machinery for the handling of organic manures, such as loaders and manure spreaders, preferably in combination with large-capacity farm trucks.

Practical Machinery of High Performance

Regrettably, the development of machinery for many groups of agrotechnical operations is lagging. Efficient intensification and its attainment by means of a certain crop-production system require almost for every crop a perfect, fine seedbed, practically as in a garden.

First of all we request engineering to supply us tractors of higher performance rated at 140 to 350 kW, which will enable us to perform several operations in one pass on a wide strip. But we also request an entire system of small machines to raise labor productivity, especially during the vegetation period and in operations where farm machinery of high parameters cannot be used efficiently. Many of the field chores are performed on growing crops that do not tolerate heavy equipment; for example, lucerne grown in irrigated systems where the soil is wet and easily deformed. From the entire process of organizing crop production--from sowing, thinning and cultivation--it is necessary to exclude manual labor entirely, and to change to semiautomated systems with accurate parameters of seeding depth, row width, planting distance, etc.

We need particularly new semiautomatic types of seed drills with controllable seeding depth and planting distance, as a prerequisite for the even distribution of seedlings over the area. In this way solar energy is better utilized, and the plants produce more sugar, starch, vitamins and other desirable substances. The entire complex of interlinked machines and lines must be derived from the seed drill, so that all operations may smoothly dovetail.

But most of all we need scientifically managed plant nutrition and plant protection. The dose of fertilizers that can be utilized effectively for the further intensive development of crop production is 370 to 420 kilograms of active ingredient per hectare.

Food Production Entire Society's Concern

From an overview of the solutions in crop production we see that agriculture has been incorporated into the the national economy's system not only administratively, organizationally and financially, but materially as well. It is linked to the system of supplier industries, and also to the system of processing industries and consumers. Thus we have a newly conceived gigantic system of mutual interlinking, a sort of macrotechnology. On the functioning of this national economic system depends the functioning of the microsystems of the individual branches within food production, and within crop production also the functioning of the biotechnological systems for the individual crops.

From the preceding it follows that the so-called industrial crop-production systems--or crop biotechnologies by their latest name--reflect on the one hand the state of the national economy as a whole, how the economic instruments function, and the quality of management in general; and on the other hand, the disciplined linkage to basic farming. The pitfall of employing general models is that they come up against traditions or different detailed conditions in the individual okreses and even in the individual agricultural enterprises, and against the experience of the economists.

The purpose of the general models is to increase and make more efficient the soil's yield. In this sense also the systems' models can be adapted partially to the traditional models. But it is not possible to alter the system of national economic inputs that determine the types of machinery, fertilizers, building components and other factors to which the biotechnological system of a given crop is already linked to a considerable extent. For the series production of the inputs will by itself transmit efficiency into food production. Through the chemical industry, engineering, large-scale construction and large-scale and efficient transportation, agricultural production receives the technological knowhow of entire society, purposefully and in a planned manner. This is no longer aid to agriculture, as we have often become accustomed to call this activity. This is already a law-conforming linkage, an intersectoral duty.

The way we are planning to gradually employ them, biotechnological crop systems are not some special invention, rather an opportunity that the supplier industries are already providing for us. This is an opportunity as well as a need to utilize efficiently the inputs of materials into crop production, particularly the inputs of the chemical industry and engineering. Successful application of the new organizational elements has been enhanced also by better conditions within the planning system, conditions that limit the administrative elements in the management of enterprises, reinforce the enterprises' own planning initiative and independence, and lead them to operate according to the khozraschet system.

However, it would be illusory to declare the biotechnological systems as legally binding and to organize their functioning from above. That such an approach would not be effective has been confirmed also by past experience, because for the realization of the biotechnological systems in the SSR we selected already in 1981 a total of 115 agricultural enterprises to act as coordinators for the production of corn, sugar beets, and vegetables. Last year the number of coordinators increased further, and by the end of the 7th Five-Year Plan their activity should extend to half of the agricultural enterprises in Slovakia. However, coordination is ineffective without economic incentives. Therefore we want such cooperation between the foremost agricultural enterprises (the coordinators) on the one hand, and the average or lagging enterprise on the other, that will be efficient also for the suppliers of the biotechnological systems. However, primarily productive services must be linked to these tasks, and they must apply scientific knowhow to practice more directly. But not even these services can be left to administrative control or to some kind of interpersonal contacts. Perfect services must be appreciated in what we pay them. "Volklore" must be replaced by economic relations, which will guarantee relatively cheaper food production than up to now, even if production is

intensified further. But this will depend also on the economic mentality of the people. Up to now agricultural workers have been stimulated partially by moral incentives and through the mass media. These will be more effective, however, if combined also with economic incentives.

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EXPENSIVE ENERGY TO AFFECT FUTURE DEVELOPMENTS

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[Article by Eng Michal Kubik, Economic Institute, Czechoslovak Academy of Sciences: "Energy Cost Will Keep on Increasing--A Significant Fact in Future Development"]

[Text] Among the basic directions in the strategy of transition to a more intensive type of economic development belongs the attainment of improved effectiveness in the management of fuel and energy resources. This requirement was once again emphasized at the Eighth Plenum of CPCZ Central Committee. Achievement of a less energy-intensive type of economic development must become one of the basic economic criteria determining the specific orientation of research and development. This calls for energy savings based on the application of scientific and technological findings to become a source for intensification of the national economy. The article points out the less developed aspects of this approach.

The problems of efficient management of fuel and energy resources assume a widely varying character at the present time. From the viewpoint of economic practice they are connected primarily with the structural rearrangement of the fuel and energy balance, improved economy in the use of fuels and energy in the productive and preproductive sphere, limitation of energy-intensive productions, modernization of energy-intensive technological equipment as well as the strengthening of discipline in drawing on and the economic use of energy.

Intensive Type of Expanded Economic Renewal

Analysis of the economy drive and of other measures in the area of fuel and energy management shows that the decisive orientation for dealing with problems of economic use of fuel and energy resources in the long run can only be purposefully implemented changes in the structure of production connected with improved utilization of fuels and energy. This approach is directly tied to the specific utilization of science and technology, with the requirement that the criterion for energy consumption (oriented toward its lowering per unit of useful effect or the final national economic result, respectively) should become one of the initial criteria in the formulation and implementation of research programs and the orientation of capital investment.

An additional criterion can hereby be formulated in general or, eventually, a certain requisite degree and measure of effective utilization of fuel and energy resources, which should be promoted by specific measures in the area of improved economy in the consumption of energy, should be determined. This measure should be given by the necessity for achieving a certain balanced relation between the relative movement of energy consumption expressed in units of value (essentially in costs of its procurement) and the physical development of consumption. If we analyze from this viewpoint development in the 1980's, it is possible to document that while the energy-intensive growth of national income (measured by means of development of physical consumption) has been showing a decreasing trend (it is pointed out that annual demand on energy kept decreasing between 1974-1980 by 2.3 percent), demands on energy measured by the costs of acquiring the requisite energy resources showed a substantial increase. The causes of this development are known. They were precipitated by steep increases in the prices of fuel and energy resources obtained from abroad with simultaneous increases in the costs of domestic resources. That was and still is an indubitably new trend which, e.g., in developments during the 1960's did not show differences that would call for specific attention.

As a consequence of the distinct deviation in the development of energy consumption in physical units and its representation in value units, energy savings could not compensate for increases in costs which resulted in bringing about basic changes in the conditions for economic renewal. Their consequence was the necessity to devote an ever increasing volume of media of exchange in foreign trade to providing the requisite fuel and energy resources and, at the same time, drawing on resources of future economic development.

Realizing these linkages means at the same time viewing the problems of economic management of fuel and energy resources from much wider national economy-oriented viewpoints and seek in them the means for a solution. The basis of this solution must be a more pronounced releasing of resources for achieving a more intensive type of expanded economic renewal. If in the development after 1973 the process of simple reproduction itself was connected (due to rapid price and cost movements in fuel and energy resources) with drawing on a part of the resources of future development, continuation in this trend in the 1980's would constitute an extraordinarily significant economic barrier to implementation of expanded economic renewal. With a certain simplification it can be said that an "opening of the scissors" between development of physical consumption and its expression in value units leads to an increase in costs for simple economic renewal which in its essence strengthens extensive trends of economic development.

This theoretical conclusion arrived at through the development in the 1970's has serious practical consequences or, rather, calls primarily for a certain degree of dynamics in lowering the demands by economic development on energy, and second of all--which can be considered as decisive--calls for the implementation of new criteria to the effectiveness of research and development. Its thematic contents must be lower consumption of energy per unit of time. If in the Czechoslovak economy of the 1970's there came to the fore a type of research and development that led to increases in direct labor input, but

resulted at the same time in increased consumption of investments, energy and materials, in the 1980's it will be imperative to promote research and development strictly oriented toward saving and efficient utilization of energy. Transition to the latter cannot be achieved without implementing new directions in the technological development of many industrial sectors with simultaneous attainment of a clear-cut valorization of energy in products (lowering the demand on energy per unit of utilitarian effect for both consumer goods and new technology).

Energy Savings As a Strategy

If the problems of energy consumption are assessed from the above-mentioned approaches, it means dealing at the same time in the overall strategy of economic management of fuel and energy resources with the problem of the mutual relation and effectiveness of expanding new energy resources and energy savings. The problem which is today discussed in connection with the implementation of an efficiency-promoting concept for the development and management of fuel and energy resources in industrially advanced countries consists essentially in seeking the most suitable ways of providing for the future energy needs of the national economy along with a realistic evaluation of the constant growth of expenses for their acquisition.

Computations lead to the conclusion that it is possible to determine also some more general criteria for the mutual relation between the costs of energy savings and the costs of acquisition of new energy resources. These criteria are determined in essence by the difference arrived at through comparison of the costs to the national economy for savings of energy with the costs required for providing indispensable energy resources. Many calculations show even under our own conditions that investing in energy savings is more effective by one-third to one-half than investing in expansion of resources.

Even though the mutual relations between costs for acquisition of new energy resources and energy savings do change and the specific results depend on the structure and characteristics of their utilization, energy savings still cannot be viewed only from this narrow viewpoint of mere calculation. The essence of orientation of a strategy for energy savings is given primarily by the fact that its results are in a smaller or larger measure changes in the structure of the basic carriers of energy consumption. In other words, much greater economy is achieved through energy savings, because it leads to a less energy-intensive development.

That means that energy savings are becoming a significant factor affecting the concept of future development.

Energy saving, in a certain sense of the word, also appears as a factor of economic growth and not only as a resource. From a strictly physical viewpoint there is apparently no difference between new sources of energy and the achieved savings. Economically, however, it involves a qualitatively entirely different process which is based on implementation of structural changes leading to continued lowering of the demands of production on energy.

Elaboration of these aspects of fuel and energy management in the Czechoslovak economy requires attention also because of the fact that achievement in energy saving is of principal importance to its future effective development. In its consequences it is connected with a widely based utilization of the enormous hidden resources which the Czechoslovak economy has in the demands of material production on energy.

In a socialist society there exist without a doubt favorable conditions conducive to the gradual implementation of such a concept in practice as a goal-oriented and planned process. However, this will call for undertaking a thorough analysis of all basic relationships in the national economy that occur in the consumption of energy, comprehensively assessing its real consumption not only according to indicators of the demand of final production on energy, but also that of subcontracting sectors, relations to foreign trade, etc. Such studies are in our country at their very inception, even though they involve one of the most important economic problems and, in a wider connection, also a prerequisite for achieving an intensive type of expanded economic renewal.

It is equally indispensable to devote attention to problems connected with specific savings of energy in regard to its individual sources. Even though energy savings are expressed comprehensively in the corresponding measuring units, their composition will also be of decisive importance in making decisions about the economic effectiveness of savings.

Savings-Oriented Technological Development

It was already pointed out that the future development of the management of fuel and energy resources should be connected on a much wider basis with savings of energy, which in its consequences is nothing more than application of an energy-saving type of research and development. If in the selection of tasks for programs and plans for the development of science and technology (outside of programs for economizing the management of fuel and energy resources) there prevailed until recently criteria connected with the minimalization of direct labor input and with quantitative characteristics of development of production, it will be of increasing importance that criteria for energy savings achieve the same level. This should apply in practice to all technological development programs and to all the tasks dealt with in the economic sphere.

If we have in mind savings in the broad sense encompassing the national economy, implementation of the findings of scientific research and technological development represents the decisive instrument for promoting the energy-saving and efficient-utilization type of research and development. At the present time it relates to practically all branches of material production, whereby the decisive share accrues to the complex of metallurgy and machine building. It is a known fact that high production and consumption of metals together with high demands of production on energy and the subsequent poor-quality utilization in machine building production significantly affects the demands on energy made by the entire Czechoslovak economy. This means that hidden resources for lowering energy consumption will have to be looked for primarily in this complex.

At the present time there exists, e.g., a relatively significant variation in machine building production's demand on energy (it is alleged that the comprehensive demand on energy by machine building sectors ranges from 6.3 tmp/mil. Kcs [6.3 tons of rated fuel per Kcs 1 million] up to almost 300 tmp/mil. Kcs). From the data of the Research Institute of the Fuel and Energy Complex it is evident that almost one-half of the volume of commodities production is represented by sectors with a considerably high demand on energy, i.e., from 75 tmp/mil. Kcs of commodity production. These sectors account, then, for almost two-thirds of the total consumption of energy.

This also makes it obvious that structural policy must take into consideration as one of its criteria an overall decrease in demands of the machine building sector on consumption of energy. The importance of the need for respecting these criteria is borne out, e.g., by the fact that in development between 1977-1980 changes in the structure of machine building as a whole did not become reflected in any way in any decrease in the demand of the machine building sector on energy. Positive changes brought about by an increasing share of sectors that posed less demands on energy were compensated for by an increased growth of sectors demanding energy. Unfavorable effects became also manifested through the fact that the dynamism of electronic sectors was less than adequate, in spite of the fact that here there becomes manifested--from the viewpoint of demands on energy--essentially a double effect. Increasing the share of these sectors in the total volume of production leads to lowering the average demand of production on energy, because their demand on energy is considerably low (ranging between 10 to 30 tmp/mil. Kcs). On the other hand, wide application of electronics in other production sectors and branches leads to a significant increase in the utilitarian features of products and the resultant increase in prices. In this manner the higher consumption of energy in these sectors becomes valorized.

The cited example graphically documents the requirement for closely connecting considerations regarding the long-term concept of research and development with the problems of and solutions to the demands on energy posed by continued development of the national economy. This also confirms the requirement stipulated during the Eighth Plenum of the CPCZ Central Committee that research and development must be directly connected with the implementation of basic socioeconomic objectives, among which indubitably belongs providing the national economy with fuels and energy. The solution to this basic problem of the national economy is not in the area of conventional energy management, but in the recognition and implementation of all the basic national economy linkages of power engineering with the entire process of economic renewal.

Additional importance accrues from these viewpoints, e.g., also to the problem of wide application of energy-saving technologies and their widely based introduction in industrial practice. This constitutes one of the other significant directions for research and development which enjoys a high priority in industrially advanced countries and which also made it possible (together with structural changes in orientation of production) to reassess some approaches to the development of new energy sources. (As of late, these problems have been receiving a high degree of attention by, e.g., economic practice in the USSR and GDR.)

The problem of fuel and energy management is becoming increasingly manifested under conditions of intensive economic development as a structural problem, the basis of which is becoming an all-round application of the findings of scientific research and technological development. Comprehensive demands on energy as one of the key features of economic development will be shaped in the 1980's as the result of continued expansion of energy resources and their savings. Wide application of the contemporary findings of scientific research and technological development as well as development of the scientific and technological revolution in their key directions must promote the enhanced role of savings as the basic feature of intensive energy management.

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BROWN COAL DEPOSITS, OCCURRENCES DESCRIBED

Warsaw PRZEGLAD GEOLOGICZNY in English No 6, Jun 83 pp 364-369

[Text]

The distribution of deposits and other occurrences brown coals in individual structural units in various parts of the country have been discussed by several authors (e.g. 2, 3, 10, 16), mainly in papers dealing with more general stratigraphic, tectonic and deposit problems. In Poland, brown coals are known to occur in the Lower and Upper Jurassic, Upper Cretaceous and Tertiary. Economic value of Mesozoic brown coals is nowadays rather limited. The major, currently mined brown coal deposits are connected with the Miocene (Figs. 1–2) but the coals are also known from other stages of the Tertiary: Paleocene, Eocene, Oligocene. Moreover, small accumulations were also found in the Pliocene.

MESOZOIC COALS

In Poland, Lower Jurassic brown coals occur in area from the vicinities of Przysucha to Ostrowiec Świętokrzyski at northern and north-eastern Mesozoic margin of the Holy Cross Mts, and between Częstochowa, Zawiercie and Siewierz in the Silesian-Cracow Monocline (Fig. 1). In these areas the coals were exploited from time to time and on limited scale. Brown coal layers are up to 0.9 m thick in the Holy Cross Mts and up to 1.2 m in the vicinities of Zawiercie. Thin layers and laminae of brown coals of the Lower Jurassic age were also found in drillings in the Polish Lowlands and thicker ones (up to 3 m thick) but seated at large depths – in the borehole Bieżuń 2 in the vicinities of Sierpc, north-west of Warsaw.

Distribution of brown coal layers in the Lower Jurassic appears controlled by paleogeographic factors and facies development of its individual stages. The coals are mainly related to continental packets present in lithostratigraphic units varying in age from the Hettangian to Toarcian. In the foreland of the Holy Cross Mts, they are known from the Zagajsk Series (Hettangian), in the Zawiercie area – the Blanowice Beds (Domerian), and in the Polish Lowlands they have been found in the Lower Mechów, Radów, Komorów, and Kamieńsko Beds, upper Sławęcin Series, and Olsztyn and Ciechocinek Beds (Hettangian – Toarcian, except for Carixian).

Lower Jurassic coals belong to the group of hard brown coals, highly coalified, luster and matt, similar in some features to low-coalified black ones. For example, coals from the Sierpc area resemble high volatile coals of the type 31 (6).

Lower Jurassic sequences with brown coals belong to sedimentary cover developed on the Young, Paleozoic Platform and, partly, Old East-European Precambrian Platform. The origin of these coals is related to transgressive stage in development of Mesozoic sedimentary complex of the platform cover.

Upper Jurassic (Oxfordian) swampy sediments with coalified flora and detritus of hard brown coals are known from the vicinities of Tomaszów Lubelski in southern part of the Lublin Basin (9). They represent the beginning of sedimentation of epiplatform Mesozoic complex in that area and they display features of incipient coal-bearing formation.

Thin lenses and intercalations of brown coals are also known from the Upper Cretaceous between Węgliniec and Lwówek Śląski in the North-Sudetic Basin (Fig. 1). The coals were exploited in second half of the XIX c. Individual layers are up to 0.6 m thick and built of coals of the group of hard, mat and luster brown coals. They are genetically related to continental facies of the Santonian-Campanian which was gradually shifting to north-west, following the retreating marine ingression (7). In that area, Santonian and probably in part Campanian sandy-clay complex of brackish-continental strata with coals marks the beginning of a regressive phase in development of epi-Variscan sedimentary cover in the North-Sudetic Basin.

TERTIARY COALS

In Poland, major resources of brown coals of economic value are connected with Tertiary strata in the Polish Lowlands. The coal-bearing strata are present in areas of three geological units: epiplatform North-West European Tertiary Basin (connected with the East-European in the Paleogene), Alpine Carpathian Foredeep and Alpine Carpathian range. Tertiary sediments of the Nort-West European Basin are distributed throughout the major part of the Polish Lowlands whilst those of the two remaining units appear limited to southern Poland (Fig. 1).

Polish part of the North-West European Tertiary Basin comprises areas of two major geotectonic units: East-European Precambrian and Central-European Paleozoic Platforms (Fig. 1) and its Tertiary coal-bearing strata belong to the platform cover. In south-west part of the country, the Basin enters some parts of the Fore-Sudetic Block and Sudety Mts, where rocks of the Tertiary complex discordantly rest on either folded basement or older structural stages of the cover.

The origin of Tertiary coal-bearing formation in the Polish Lowlands appears related to some general regularities in development of the platform cover. In that region, inundational stage in development of epi-Paleozoic plat-

form cover ended with origin of marly-limestone marine formation of the Upper Cretaceous, being followed by a regressive and emersional stage, comprising the Cenozoic and delineated at the top by Quaternary glacial formation. The Paleogene is characterized by predominance of clastic epicontinental marine sequences of regressive cycle, broken by some transgressive events, whilst sandy-clay and coal-bearing continental strata, partly coeval with the marine, are of subordinate character (Fig. 2). Taking this into account it may be stated that the Paleogene of the Polish Lowlands, locally without top parts of the Upper Oligocene, represents an incipient, i.e. embryonic coal-bearing formation in the classification scheme proposed by S.Z. Stopa (13). The Neogene, locally comprising a part of the Upper Oligocene, is represented by strata of continental and brackish coal-bearing formation, passing towards the top into those of the clay formation and, finally, the mottled formation of the Pliocene (Fig. 2). In the Fore-Sudetic area, the coal-bearing formation is passing upwards or, in some places, laterally into the kaolin-sandy formation (Kalawa Beds – Fig. 2). The Neogene formation may be treated as coal-bearing formation proper, i.e. anthracosuretic in the S.Z. Stopa (13) classification.

The Tertiary section comprises ten coal horizons or groups of coal seams (2) in the Polish Lowlands. The groups are varying in distribution and number and thickness of coal layers (Fig. 2). The coals belong to the group of soft, mainly earthy and xylith coals.

In sedimentary cover of the East-European Platform, brown coals form moderately thick lenses and layers in the Upper Miocene and, sporadically, Pliocene, Middle Miocene and Lower Oligocene (Fig. 2). The known brown coal deposits are small and they often display secondary glacitectonic disturbances. They are mainly known from the Upper Miocene in the vicinities of Kouzalin, Tuchola, Olsztyn and Kozienice. Coal layers are rarely over 3 m thick there.

In area of the Central-European Paleozoic Platform, brown coals are present in the whole section of the Tertiary, being known from the Paleocene, Eocene, Oligocene, Miocene and Pliocene (Fig. 2). Of these, Miocene, especially Middle and Upper Miocene coals (coal seam groups II and I) are of the highest economic value and they are mined at Turoszów, Sieniawa, Konin, Turek and Belchatów (Fig. 1).

Some Tertiary coal-bearing horizons are paralic in character in the Polish Lowlands. This is the case of local occurrences of coals of the seam group VII, related to regression of the Lower Paleocene sea in the vicinities of Szczecin and Golenów. Coals of the seam group VI originated in result of transgressive oscillations of the Middle Eocene sea, in coastal swamps developing in the same region. In the Early Oligocene, a new marine transgression came from the west, gradually comprising the area of Poland. That transgressive episode began with deposition of continental and brackish sediments, locally with paralic brown coals of the seam group V. The shallow

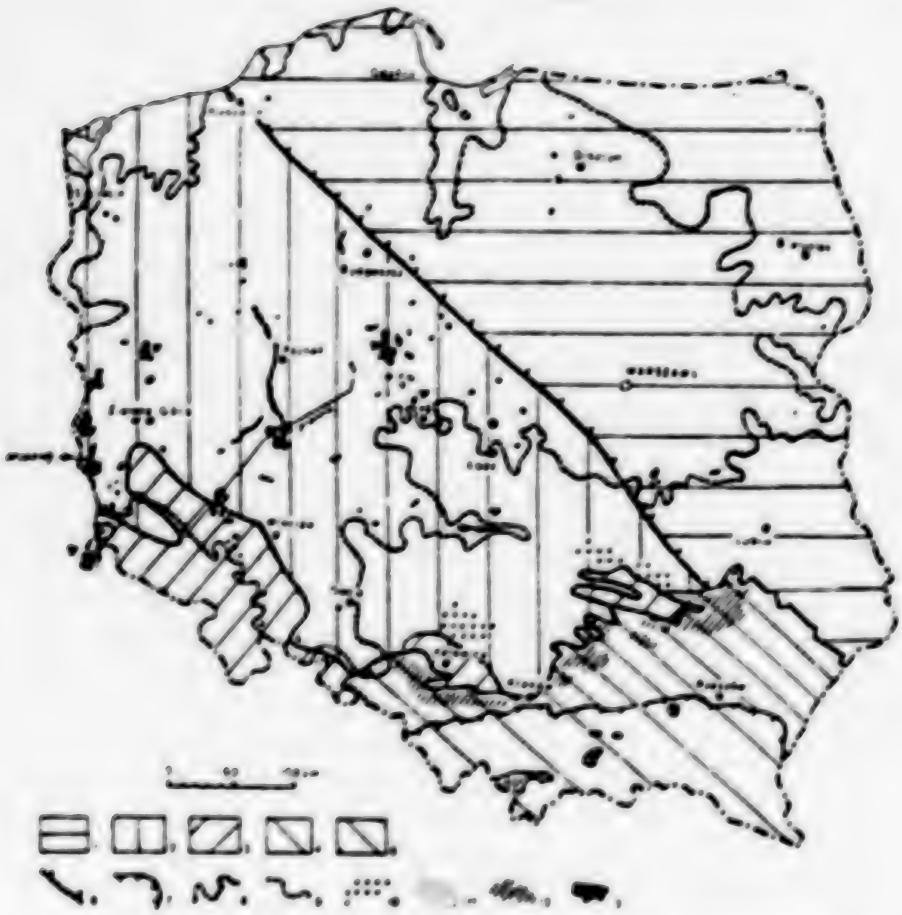


Fig. 1. Distribution of brown coal deposits and occurrences in Poland on the background of major structural units

1 – East-European Platform, 2 – Paleozoic Platform, 3 – Fore-sudetic Block, 4 – Silesian, 5 – Carpathian Foredeep, 6 – boundary of East-European Platform, 7 – Carpathian overthrust, 8 – extent of Tertiary coal-bearing formations in Polish Lowlands, 9 – extent of Miocene strata in Carpathian and Carpathian Foredeep, 10 – occurrence of brown coals in Lower Jurassic, 11 – occurrences of brown coals in Upper Cretaceous, 12 – occurrences of brown coals in Miocene in Carpathian and Carpathian Foredeep, 13 – deposits of brown coals of Tertiary age

sea left glauconitic sands and clays and it retreated in the Late Oligocene. In south-western Poland, a zone of coastal coal-forming swamps began to migrate following the retreating sea. Coals of the seam group IV were forming in that zone (12).

The major resources of brown coals are connected with the Miocene. The Miocene section comprises three groups of coal seams which represent an extension of paralic brown coal layers of Lusatia in the German Democratic Republic (8). Intense development of swamps in vast areas in Poland and GDR in the Miocene may be explained in terms of eustatic rise of sea level and influences of marine transgressions in the Hemmoor and Reinbek times, reaching the area of Poland through the North German Depression. Taking this into account it may be assumed that Miocene brown coal layers of western Poland are paralic in character and related to

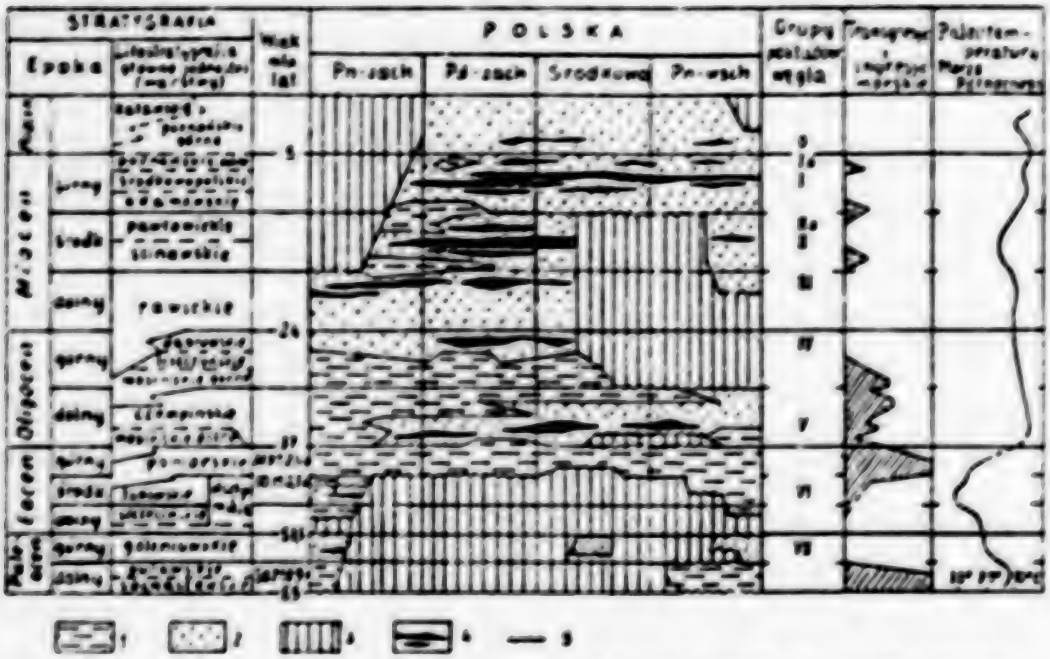


Fig. 1. Summarized lithostratigraphic profile and stratigraphic subdivision of the Tertiary in the Polish Lowlands

1 – marine and brackish rocks; 2 – continental rocks; 3 – lack of rocks; 4 – brown coals; 5 – unconformities of gaps

Paleotemperatures in the North Sea after B. Buchardt (1)

deposition in vast coastal swamps (12). Brown coal deposits occurring in central Poland and in separate, isolated basins or troughs (e.g. Turów or Bełchatów) represent the limnic type.

Paleogene occurrences of brown coals (except for the Upper Oligocene ones) are usually lenticular in shape and limited in extent and thickness, usually less than 1 m thick. They may also occur in depressions of either tectonic or karst origin but then their thickness is much greater (e.g. coals from the vicinities of Goleniów and in the Rogoźno deposit).

Upper Oligocene and Miocene coals are widely distributed in central and western Poland. They have the form of layers or extensive lenticular bodies, subhorizontal or gently dipping towards center of a basin (Fig. 3). Individual coal layers are up to 12–18 m thick and the recorded differences in thickness of both the whole Tertiary packets and brown coal layers are related to varying mobility and nonuniform subsidence of individual blocks of deep basement. The deposits such as Gubin, Cybinka, Legnica, Ponsec, Konin and Trzcianka belong to layered and lenticular ones. Some of them were subjected to secondary deformations connected with dynamic stress of icesheet mass in the Pleistocene, being nowadays involved in resulting in origin of complex glaciectonic structures (e.g. the Babina, Henryk and Sieniawa depósits – see Fig. 4).

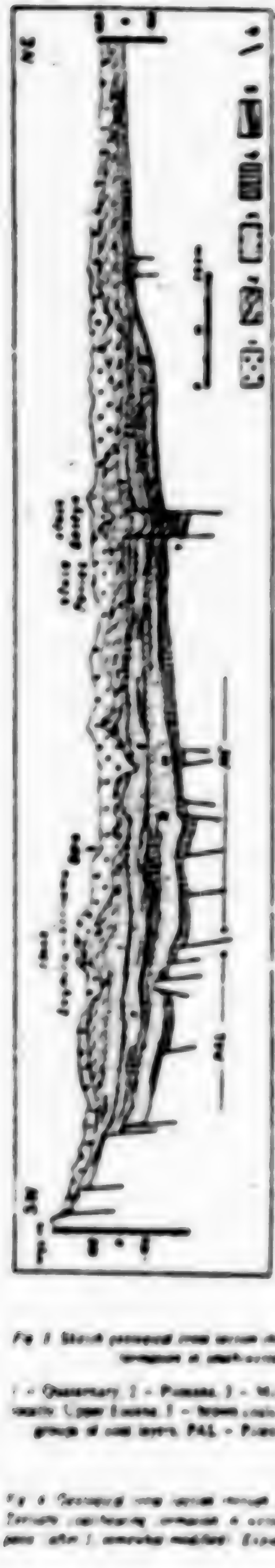
In the Tertiary, Mesozoic tectonic troughs underwent rebuilding by rejuvenation of networks of their marginal faults, in the western Poland (4). Some troughs began

to form as early as the Paleogene but the major stage in their development has taken place in the Miocene, in connection with Late Alpine movements (12). Accelerated subsidence of basement blocks and compaction resulted in increase of thickness of Tertiary sediments in these troughs in relation to their neighbourhood. This is especially the case of brown coal layers, attaining large thickness (often over 100 m thick) in the troughs (Fig. 3). The deposits from Bełchatów, Czempin, Krzywin, Gostyń, Nakło and other localities are related to tectonic troughs and depression in area of the Paleozoic Platform.

In northern, peripheral zone of the Alpine Carpathian Foredeep, small brown coal deposits and occurrences are known in the Carpathian and Badenian. Individual coal layers rarely exceed 3 m in thickness there. The zone of distribution of continental and brackish sediments with paralic brown coals delineates a depressed and swampy part of the Foredeep, gradually transgressed by the Badenian sea. This zone stretches close to the boundary of the Foredeep and Platform, from the Upper Silesia through southern margin of the Holy Cross Mts to southern margin of the Lublin Upland (Fig. 1). Brown coals occurring in that zone are soft and usually earthy. The distribution of small deposits of these coals appears limited to northern marginal part of the Foredeep. They are found in proximity of faults, in small basins developed upon shallow-seated pre-Tertiary bedrock. Small Chomentów and Trzydnik deposits may serve as examples here. Any large-scale development of coal-bearing formations was here impeded by tectonic unrest and migration of facies zones in the Foredeep and sedimentation of these formations has been soon finally broken by marine transgression in the Badenian.

Brown coals are also known from Tertiary flysch and molasse sequences in areas of Alpine foldings in the Carpathians. Thin laminae of allochtoneous, hard humus brown coals were found in the Magura flysch in the vicinities of Jordanów and Nowy Sącz (14) and Neogene brown coals – in molasse rocks in intramontane depressions formed after folding of the flysch range, in the Orava – Nowy Targ and Nowy Sącz basins. In marginal, northern part of the Outer Carpathians, brown coals are known from the vicinities of Grudna Dolna, Iwkowa and Brzozowa (Fig. 1), i.e. the proximity of the margin of Carpathian overthrust.

Tertiary sediments of the Orava – Nowy Targ basin were described in detail by L. Watycha (15). They rest on deeply eroded rocks of the Podhale Flysch, Pieniny Klippen Belt and Magura Flysch. The basin is infilled with continental sediments of alluvial cones with intercalations of swampy packets with brown coals, dated at the Upper Oligocene, Miocene and Pliocene and up to 1,300 m thick. Limnic brown coals, both hard and soft, are present throughout the section in the form of discontinuous layers and lenses 0.2 – 0.5 m thick (up to 2 m thick at the most). The character of sedimentation in that intramontane depression with highly mobile floor



Ryc. 4
Fig. 4

Ryc. 3
Fig. 3

Fig. 3. Sketch geological cross section through Tertiary coal-bearing formation in south-western Poland

1 – Quaternary, 2 – Pliocene, 3 – Miocene, 4 – Oligocene and locally Upper Eocene, 5 – brown coals, 6 – [illegible], I–V – groups of coal layers, PAL – Paleozoic, MZ – Mesozoic

Fig. 4. Geological cross section through glaciotectonically disturbed Tertiary coal-bearing formation in western Poland – [illegible] (after [illegible] somewhat modified). Explanations as given in Fig. 3

was, however, rather unfavourable for formation of thick and extensive brown coal layers.

The conditions of sedimentation of molasse Miocene rocks in the Nowy Sącz basin were similar to the above mentioned (11). The basin, developed on flysch series of the Magura nappe, is filled with Miocene continental sediments over 500 m thick and comprising numerous brown coal intercalations and layers up to 2 m in thickness. Fresh-water Miocene sediments are overlain here by a thin complex of brackish and marine Lower Badenian ones.

In the Grudna Dolna basin, marginal part of the Outer Carpathians, folded rocks of the Krosno flysch are overlain by marine molasse sediments of the Lower Badenian, with fresh-water ones at the base. The latter comprise a brown coal layer up to 3 m thick. The Grudna Dolna Miocene is thrusted over the Miocene of the Carpathian Foredeep, along with the flysch.

CONCLUSIONS

It follows from the above review that deposits and occurrences of brown coals in Poland are related to sedimentary platform cover and molasse sediments in the Carpathian Foredeep and intramontane depressions. Brown coal deposits characterized by the highest thickness of coals, extent and resources are related to the Tertiary brown coal formation, developed in area of the Central-European Paleozoic Platform (Figs. 1–2). Characteristic features of this coal-bearing formation include:

- the presence of continental and brackish sediments markedly varying in lithofacies;
- thickness varying from about a dozen meters to some hundred (400–450 m);
- small number (up to 10) of coal layers;
- coals confined to middle and upper parts of section of the formation (Middle and Upper Miocene);
- coal layers are markedly varying in thickness, attaining some dozens or over somewhat over 100 m in thickness at the most;
- the layers are almost horizontally arranged, with low angle dip towards center of a basin and disturbances due to faulting are relatively rare;
- layered brown coal deposits are fairly extensive, up to several hundred kilometers in area and the mode of development of coal layers appears highly uniform;
- lenticular brown coal deposits are developed in local basins and they may display high variability of coal layers;
- brown coals are represented by the group of soft coals, usually earthy and xylith ones, coal metamorphism (diagenesis) is not advanced and its differentiation is reflected by changes in humidity;
- the whole formation or its part is often scoured or glaciotectonically disturbed.

In the area of the Central-European Paleozoic Platform, especially in south-western Poland, conditions were ge-

nerally favourable for accumulation of phytogenic matter in the Tertiary. Areas situated in the foreland of block-uplifting Sudety Mts were characterized by increased rate of subsidence in the Late Paleogene and Neogene. The rate of subsidence was, however, varying laterally, depending on differences in mobility of individual basement blocks. It seems that the bulk of brown coal deposits are concentrated at the contact of blocks subjected to movements differing in signs. When sedimentary conditions were favourable and the subsidence compensated by sedimentation, thick layers of coal-forming matter were originating. Accumulation of phytogenic matter was facilitated by paleogeographic-facies and climatic conditions, making possible intense development of vegetational cover.

CSO: 2020/4

SHORTAGES OF PLANT WORKERS NOTED

Job Openings in Poznan Area

Poznan GAZETA POZNANSKA in Polish 23 Aug 83 p 4

[Article by Hanna Wojciechowska]

[Text] The prognosis of unemployment which accompanied the preparation and implementation of economic reform did not come true. The storm passed by on the side. At the employment office the number of jobs has remained basically the same over the past year. In Poznan there are approximately 4,000 positions for men mainly in the construction and metallurgy industries, and 2,000 openings for women. The largest shortage, however, is present in the bookkeeping profession, as well as a shortage of employees in the procurement field.

How do the enterprises deal with these serious shortages? Are they perhaps attempting to recruit retirees, especially those who took early retirement? Do the economic situation and the high market prices incline women on maternity leave to return to work? We took a survey in 10 of the larger enterprises in Poznan.

Everyone feels that there is a particular shortage of workers in the production, procurement, and transportation sectors, as well as in the stores. "Fifty workers today, I wish I had a 100 tomorrow"--such were the responses to our first question. Some of the factories have been subordinated to the law, and categorized as being important for the economy. Thus, the employee who wishes to leave such a factory may not be able to do so, and may be compelled to remain another 6 months and in certain cases up to 9 months. As our interlocutors in the factories tell us, this solution may ease the situation by resolving the problems with time, and not allowing for a decrease in production or the closing down of certain departments. Yet they are hesitant to attach great hope to the law, especially insofar as it concerns the quality and volume of output of those workers who wish to but cannot leave. What do they do in that case? They look for workers, and advertise their enterprises. They stress earning potential, incentive awards, and public opportunities. They attract new arrivals through such benefits as residence in the workers' hotel,

a coal allowance, payments in zlotys, holidays and camps, in other words, whatever can be offered. The results of these endeavors are varied, but they last. After the holidays especially energetic efforts will be made to recruit new employees for the metallurgy sector in general, and especially for tool metal workers, as well as machinists, grinders, welders, and turners. At that time, former students will apply for jobs. The majority of factories are turning toward the youth for technicians, mechanics, electricians, and even to general secondary school graduates for whom until now there has been no demand. For example, the Teletra State Teletransmission Works wishes to hire high school graduates who are willing to train for jobs in bookkeeping and the procurement fields.

No one, however, is counting on the return of the retirees. Of course they will hire anyone who wants to return, even as they have been doing up to this time. Yet not many are returning, even though the factories have tried to convince them otherwise. The ZNTK [Railroad Rolling Stock Repair Shops] arranged a meeting with about 600 retirees. Yet only two returned to work, though of course there are certain signs of interest concerning the new employment conditions. So perhaps by fall, when work in the private plots and gardens ends, certain fruitful decisions will be taken. Following a meeting with 57 persons at Teletra, only 2 returned to work. At the Wiepofama Wielkopolska Mechanical Equipment Factory only several out of about 200 individuals returned. Apparently at Lechia a few more returned, about 15 persons returned to work at the Lechia Harvesting Machinery Factory, and chiefly as security guards.

As far as retirees are concerned, the subject invariably arouses agitation since the oldest and best specialists are those who will be the hardest to replace in the long run. Often they were the type of specialists who through a sixth sense were capable of diagnosing problems, while their current replacements grope in the dark. They retired, however, and in general are unwilling to return. Our factory representatives do not rely on them, since they knew them well, and are aware that the majority were tired, sick, and exploited workers. This is not, however, the whole truth. Many of them still feel well enough to work part-time. They free-lance in private skilled enterprises, and do not do too badly at that. For them all the financial proposals of their parent enterprises are much too unsatisfactory. Therefore, the retirees should be crossed off the lists sooner or later. Clearly, we should not abandon the discussions, but in the face of such shortages each worker counts; however, even if more of them return to work they will not solve the employment shortage.

The same is true of women on maternity leave. Those who return to work are few. The majority have remained at home, some have even undertaken cottage work. Their parent factories are aware of this, although part-time work during maternity leave must be officially approved. The majority of the young mothers have reduced the family's needs to correspond to a smaller family budget. They manage the family budget quite efficiently, standing in line with their children in the mornings, and cooking cheaper meals and economizing carefully.

How do the factories manage to fulfill the plan? At Wiepofama they tell us that they try to keep the workers they have by paying them good wages, and using them most efficiently on the job. In addition, they implement various measures, for example, they give preference to those white-collar workers who want to and can perform manual tasks. During the afternoons 22 persons operate the machines. We hear that there are quite a few who have not done any manual work, particularly in the construction offices. They can be better utilized by being included in factory agreements.

Another measure concerns those who possess diverse talents, and thus if someone happens to have nothing to do at his particular work position for a time and is able to run another machine or carry out certain other necessary tasks which need to be performed at that time, then he should be utilized in this manner. Several dozen such authorizations for undertaking this type of second job have been issued at Wiepofama.

These types of organizational measures are also applied in other factories, and are especially valuable during vacation periods. They can also prove useful for the long-term. The acute shortages of workers are forcing the factories continuously to try to improve work organization and to seek different reserves of workers.

Work Productivity Assessed

Rzeszow NOWINY in Polish 25 Aug 83 p 1

[Article by (azet)]

> [Text] In conjunction with the upcoming September 1980 anniversary, the foreign press is once again intensely interested in the situation and attitudes of our country. Poland's situation has once again returned to the front pages of the Western papers, and also takes up much time on Polish language radio stations.
>
> The general tone of the published commentaries which reveal a distorted image of Poland in August 1983 is maintained through an almost instructional tone. They instruct the Polish workers on how to commemorate the anniversary of the Social Agreements. They discuss the fact that work is progressing at a snail's pace, with indifference, etc. How does this correspond to the existing situation? Yesterday we talked with the workers at the Predom-Zelmer Mechanized Household Appliance Works in Rzeszow. Here, briefly, is what they said.

Zdiszlaw Korzeniowski, a foreman at the Zelmer training workshop, said: "I have just heard on television that an appeal was made which called upon the workers to work less productively. In our factory nothing was or has ever been said on the subject. I have not noticed any stoppages in daily production. After all, many others besides myself were astonished by the statement that

such an appeal is being disseminated. We produce our norms and will continue to do so, any appeal notwithstanding. I believe that if someone were to hear such exhortations, this would only be to our detriment.

I am mainly interested in my job and my daily household problems. The latter can, after all be resolved through efficient work. Only when everyone approaches the issue in this manner will store shelves be stocked. Politics do not interest me in the least."

Jozef Kielbasa from the PR-20 department notes: "I believe that some people, the activists in so-called underground Solidarity cells, have gone too far. It seems to me that many of them are beginning to realize this. They are coming out into the open and taking advantage of the amnesty law, much like Wladyslaw Hardek did several days ago. I presume that his attitude is obvious now. He understood that the type of activity in which he participated is not sensible, and the majority of the people have understood that one must work in order to surmount the crisis.

In our department people are working without delays. The first quarter of this year was the best in 6 years insofar as plan fulfillment was concerned. During the second quarter, the situation declined a little; however, it was influenced by impartial factors (poor cooling of machines), which at any rate occur every summer."

Wlodzimierz Mazur of department PR-30 indicated that "I am surprised by the rumor of certain appeals and poor productivity. Insofar as my department is concerned, the current plan is being fulfilled despite the fact that the majority of workers are peasant workers, who in addition to their work at the factory must do their harvests. This is to the credit of the entire work force.

For example, yesterday's production of vacuum cleaners totaled 3,411. We also have the cooperation of other departments which are able to deliver the necessary materials for final production. I believe that their workers also work efficiently.

If we were to decrease the pace of production, this would primarily affect us. After all, we do piece work. Therefore, efficient production is most essential to us, and I presume for the potential buyers of our vacuum cleaners. Thus, I believe the appeal for decreased production to be ridiculous."

Unfilled Jobs Result in Lower Productivity

Krakow ECHO KRAKOW in Polish 6 Sep 83 pp 3-4

[Article by Marek Lovell]

> [Text] There was to be unemployment. Some saw it as a brutal yet effective result of a lack of work discipline and low productivity. Others protested violently that this was not the way. Meanwhile, during the past year a

> shortage of workers has occurred that has been unknown for decades. A reporter hears that in almost every industrial enterprise there is a shortage of workers. Besides being an obstacle to adequate supply, it is the main reason for the non-development of production.

Where Are These Workers Then?

The simplest response is:

--early retirement (37,000 in Krakow Province);
--on maternity leave (22,000);
--on foreign construction projects (12,000);
--in the unsocialized sector. (How many have transferred is unknown. Last year 99,000 individuals left state institutions while 86,000 were hired. Approximately 13,000 did not officially renew their employment. A portion of them went into the skilled trades, Polonian firms, etc.)

According to the figures given by the enterprises, approximately 13,000 workers are needed.

Nothing comes about from these statistics. We can continue to reflect on the reasons for the dimensions of the social phenomenon of early retirement. No reasonable individual will deny the need for the development of foreign investments, nor complain that the skilled trades are developing.

The response to the question presented in the title is much more complex.

Workers Go Where They Are Better Off

Kazimierz G., a 20-year old electrician working at the Electromontaz Enterprise for the Production and Assembly of Electric Equipment for the Construction Industry, earned 4,400 zlotys plus a 40 percent bonus. He notes that for 2 years he waited in vain for a raise (at his new job he earns 1,500 zlotys more).

Marek J., a 25-year old crane operator, worked at the Nowa Huta Cement Works where he earned 29.8 zlotys per hour plus a bonus. "The work was difficult and hazardous to my health." (Currently he works under better conditions and earns about 1,500 more.)

Ryszard K., a 32-year old research assistant at the Foundry Institute, earned 5,800 zlotys plus a bonus. "It wasn't just the money, I was unable to get along with my superior who was basically incompetent." (He now earns 6,000 plus a bonus.)

Similar examples can be presented indefinitely. No one wants to work for low wages, under bad conditions without an opportunity for advancement. This is obvious. Workers mainly leave the unmodernized factories where work is difficult and wages do not compensate for the conditions. Besides, the list of reasons is very long (social matters, housing conditions, organization,

conditions, etc). If workers constantly leave an enterprise, this indicates that the situation is bad in that enterprise.

Yet there are areas where there is no shortage of workers. In certain professional fields and groups the shortage is extremely serious, whereas in some others there is a surplus.

Attempts are being made to counteract mass resignations by workers through the use of summary administrative and repressive decisions. For example, the export construction enterprises in Krakow Province were forbidden to hire those who had left their jobs at the HiL [Lenin Steelworks] (approximately 1,000 leave annually). Based on the law of 21 July, certain enterprises are extending the time for giving notice to 6 months. An example from the MPK [Municipal Transportation Enterprise] is a fragment of a letter written to the editors. Mrs Wladyslawa Belza writes concerning the brutal and impolite behavior of the bus driver on route 123 on 5 August at about 2200 hours at the gates of the Nowa Huta hospital: "It was not known when he was going to depart since he simply said: 'It's simply disgusting.' When asked why he didn't change jobs, he responded that there was an order which forbade resignation from the MPK. (This in fact concerns the extension of time for giving notice--editor's note.) I wondered, as perhaps did other passengers riding that day on the bus, who would benefit from this kind of worker who was only carrying out his duty under coercion?"

Thus, in the long run these types of methods will not resolve the employment problems in those factories with difficult and thankless work, and in some sectors of the economy.

The Ministry: A Substantially Exaggerated Deficit

The Office of Employment defines the matter unequivocally: "The employee shortage exhibited by numerous enterprises (greatly exaggerated as a rule) constitutes a convenient justification for the low production levels by concealing the real causes."

Economists concur, noting that manpower is very cheap in Poland and in spite of everything more easily available than mechanized or automated production. In fact, the factories are interested in maintaining a high level of employment and in demonstrating a distinct lack of interest in its rationalization. Therefore (this is only the opinion of some specialists), administrative solutions are needed which will limit the currently existing freedom of the enterprises insofar as hiring policies are concerned.

Ryszard Wanat, the deputy director of the Krakow Office of Employment, acquits himself by noting that "the department launched its employment policy through an open and unrestrained job market. The administration was deprived of the opportunity to rectify the glaring disproportions. Meanwhile, the opportunity to intervene should be introduced immediately into the reform, which is being implemented under extremely difficult conditions."

Let's return to the instruction of the Office of Employment which I cited earlier. What follows is an enumeration of initiatives which the enterprises complaining of a shortage of workers should undertake. Among others, they must change the internal wage structure (in particular to rectify the bonus level, which remains entirely under factory management), increasing incentives for taking jobs where shortages exist; they should apply a flexible form of hiring (decreased workday schedule, flextime, a weekly account of working hours, etc); they should organize labor input. The enterprise must require from the Office of Employment the issuance of priority status insofar as potential employees are concerned. In sum, there are 25 proposals and the culminating point is that "only unsuccessful exhaustion of all 25 proposals in order to satisfy the employee shortage entitles us to conclude that in a given enterprise the personnel shortage is the reason why production has decreased."

The example of the Szadkowski Enterprise, which after all is old and has bad working conditions, attests to the fact that various solutions can be found in spite of the ministry's orders. Even the fact that last year several dozen workers and retirees were hired part-time was based upon an agreement. During the first 4 months of this year, 60 more individuals were hired (14 were retirees), based upon those same principles. Of course it is difficult to term this a success, although the shortage was eased somewhat.

A Catastrophic Situation at Bonarka

Many years ago this factory was labeled as the "dust factory in Podgorze." In the phosphorite powder department, where there are clouds of dust which are hazardous to workers' health, it is foolish and senseless to debate working conditions since "no matter what the horse looks like it can still see." One of the grimy workers notes that the work is hard and dirty, shrugs and returns to work.

When mention of the 25 proposals for hiring workers is made, Wladyslaw Konieczny, director of the Economic Department, smiles forgivingly. Despite the fact that he is a retiree, he still works a quarter of the normal time, specifically on Tuesdays, Wednesdays, and Thursdays from 8 to 12. In the production sector few retirees can be convinced even to work a short workday. Therefore, various incentives are being used, which at times are contrary to the law, in order to induce workers to switch to the more difficult jobs where they can have 2 days off (a 4-shift system). If they want to earn a good salary, they should work in the phosphate department and earn two to three times the normal hourly wages. Officially this is called "a bonus for voluntary transfer to other jobs."

How much do people who work at the most difficult jobs normally earn? A total of 12,000 to 12,500 zlotys.

How much should they earn to prevent them from leaving, specifically what should the compensation for difficult and laborious working conditions be? Salaries should be 5,000 zlotys higher.

The factory has a shortage of approximately 100 workers, and considering that total employment is 420, this deficit is quite serious.

If able, the factory increases the wages of those in the high demand jobs where a shortage exists. Yet the fact remains that it cannot do much. The goal is to achieve a net production of 100 percent, because at that time wages from permanent positions being vacated will remain. The principle is correct. Those working in the phosphate department can be included, and rewarded for increased productivity. Yet the fact remains that this law only became effective this year. Last year both workers and money were lost. These were large sums of money, since many workers left because wages in the chenical industry were and still are low. This constitutes an error in the wage reform system, since an equal advantage was not given to all sectors and factories.

What is the solution for Bonarka as the decreased level of employment, brought about by unrelated factors, has achieved catastrophic proportions?

At the present time one can only dream of modernization and automation. Certain enterprises essential for the economy and with extremely hard working conditions which were overlooked to some extent during reform implementation must now get priority treatment. This would be best given in the form of tax reductions for the professional activity fund.

Unemployment was predicted, yet in the meantime....

This erroneous assumption resulted in a series of decisions being taken which were unwise and not supported by a profound analysis of the consequences.

Most of the nuisance is being caused by the changeability of the financial regulations, the uncertainty whether tomorrow, next month, or next year changes may not occur once again. As a result of this struggle, the following opinions can be heard: "At the factory we get the impression that one group has developed some rather good economic reforms, while the second, fearing certain consequences of the economic reform implementation, has blocked it successfully."

The reduction of Poland's work force had been predicted for many years. Optimists from the Ministry of Labor, Wages, and Social Affairs believe that the deficit will disappear by 1985, and in addition the employment structure will change (a decrease in the socialized economy, and an increase in labor input and skilled trade). This is so-called wishful thinking which cannot be brought about through administrative efforts.

The bonus system represents the key to solving the labor problems, and is the chief economic instrument for guiding the work force supply. It is stable, doesn't allow for wages to spiral with decreased production and inflated employment (construction), does not discriminate against factories like Bonarka, and is at the same time not egalitarian.

How do we create such a system? That is another story. We must, however, remember the history of the WOG's [Large Economic Organizations], which as time has passed have been recognized as a very promising concept; yet they were totally destroyed shortly after their establishment by administrative bans and orders. The WOG's were not permitted to develop and were unable to establish economic mechanisms which would regulate certain initial irregularities.

We hope that history will not repeat itself.

Cooperation Between Unions, State Work Inspectorate

Krakow GAZETA KRAKOWSKA in Polish 6 Sep 83 p 3

[Interview by Bogumila Pieczonkowa with Jozef Slezak, Krakow district labor inspector]

> [Text] The State Work Inspectorate and the trade unions are beginning their work, and I asked Jozef Slezak, the district labor inspector in Krakow, for information on the subject.

Jozef Slezak recollected that the State Labor Inspectorate was established on 6 March 1981 by a Sejm statute, and according to this law is subordinate to the State Council. This ensures its absolute independence from the administration and the factories which it encompasses in its supervisory activities. Both the State Labor Inspectorate law and the trade union law are compelled to act jointly for an improvement in working conditions and the promulgation of self-management in work relations. These principles are entirely in agreement with the laws and obligations of trade unions throughout the world since their domain is principally that of concern for security and compliance with work laws.

[Question] From its initial implementation the trade union law has been characterized by a veritable need for cooperation between the State Labor Inspectorate and the trade unions. How will this joint cooperation be represented?

[Answer] First, it concerns a bilateral flow of information on the status of working conditions, work-related accidents, work-related illnesses, and an appraisal of compliance with the work laws. The chief labor inspector is obligated to relay reports to the federations which represent the supra-factory structures of the trade unions. The need for this type of information is also becoming apparent on the provincial and regional levels. Secondly, it concerns a periodic meeting of the State Labor Inspectorate with the factory trade unions, with the departmental levels, and in various other organizations in order to exchange thoughts and views. Thirdly, consultation on decision-making is essential! I stress this because currently no organ can circumvent the trade unions. It must consider their opinions, all the more so in such vital matters as those considered workers' matters through and through, for example, conditions, work safety, and compliance with the law. Fourthly, legal guidance will be developed in the area of work safety and hygiene.

[Question] The supervision of the enterprises will undoubtedly constitute the fundamental method for these activities.

[Answer] Yes, during the time of this legally implemented supervision, state inspectors will be obligated to contact the trade unions directly in order to become aware of their views, opinions, and take their suggestions and proposals into consideration. Since the workers are in close contact with their factories on a daily basis they are well aware of the existing conditions, transgressions, shortcomings, and needs. Therefore, they are better qualified than any conscientious or discerning outside supervisory organ could be.

[Question] How will the State Labor Inspectorate participate in all this?

[Answer] This is an organ which was established on 24 June 1983 by a Sejm resolution, in order to guarantee the trade unions the necessary privileges in carrying out successful supervision of compliance with work rules. In accordance with the legal regulation governing all enterprises where trade unions are functioning, social labor inspectors could be elected on the factory, department, and group levels. The trade unions received the authority to establish a detailed framework of work inspection in each enterprise. The election of social inspectors must be accomplished by 30 June 1984.

[Question] There are, however, numerous enterprises where, because of trade union initiative, since the implementation of the trade union law on 1 January 1983 to the implementation of the Social Labor Inspectorate law on 30 June 1983, social labor inspectors were appointed or elected. Will the elections have to be repeated in these cases?

[Answer] The social labor inspectors appointed or elected before 30 June will retain their mandate until 30 June 1984, or until earlier elections are held. The social labor inspectors of the former trade unions of course lost their legal authority, much like the former trade unions lost theirs with the revocation of their registration on 8 October 1982.

[Question] How are elections of social labor inspectors carried out? Does the entire work force serve as the electorate, or is it members of the trade unions? Can the tasks of a social labor inspector be entrusted to a worker or only to a trade union member?

[Answer] In accordance with the law, the social labor inspectors are elected (for a 4-year term) and dismissed by the workers. In enterprises of up to 300 employees, the social inspectors are elected by a general workers' meeting, in enterprises with a much larger work force, group social labor inspectors are elected by a workers' group from its own ranks, while departmental social directors' groups also elect from among themselves. Thus, a factory labor inspector is elected by group and department labor inspectors from within their own ranks. The trade unions possess a legal right to decide on whether or not the social labor inspector is a union or non-union member.

[Question] Whose interests do the social labor inspectors represent, those of the workers of the union members?

[Answer] They will always represent the interests of all workers.

[Question] What powers do the social inspectors possess?

[Answer] They are empowered to inspect everything which is related to matters of work safety and hygiene, and work rules. They inform the factory or department management, or the foreman insofar as shortcomings or violations re concerned. And in such cases the director undertakes a decision to eliminate the problems uncovered by the social inspectorate, and subsequently issues written orders defining a time limit for the elimination of these problems. The law also authorizes the factory social inspectors to issue orders in matters related to the immediate suspension of operation of machinery or specific work in cases where there is a direct threat to the worker's health or life.

[Question] What shape will the work of the Social Labor Work Inspectorate take with respect to the State Labor Inspectorate?

[Answer] The social labor inspectors take part in our inspections; they can request such an inspection. The state labor inspector is obligated to watch over the carrying out of the proposals and comments of the social labor inspector. The authority of the social labor inspectors to sit on committees which determine the circumstances and causes for work-related accidents also deserves to be emphasized. An accident report is then issued, which serves to determine the necessary means and tasks to be carried out following the accident, either precautionary or for material evidence to protect the injured workers and their families.

[Question] Is the Social Labor Inspectorate law protected from violation by certain regulations and sanctions?

[Answer] Violation of the Social Labor Inspectorate law, in particular impeding the work of its inspectors, is a crime against workers' rights and punishable by a fine of up to 20,000 zlotys. Punishment is adjudicated by the state labor inspectors. At times the conflicting role of the social labor inspectors has resulted in work relations being given special attention, as the labor inspectors cannot be dismissed during their term of office.

[Question] Does the crisis situation also affect work safety and hygiene matters?

[Answer] During difficult times, work conditions are equally difficult. We estimate that in the provinces of Krakow, Tarnow, and Nowy Sacz the urban areas included in the Krakow Regional Labor Inspectorate, the means of production and consequently the buildings, machinery, production equipment, vehicles, and others are only utilized at 65 percent of their capacity. The most threatened jobs, departments, and positions suffer as a rule from a lack of adequate personnel staffing. In such cases it is difficult for workers to detect and supervise everything. Thus, problems have developed which previously did not occur or only happened sporadically. In addition, the incentive plans implemented at times are in conflict with the law, for example, the emphasis on

overtime work. These examples clearly attest to the fact that labor protection activity has become indispensable as never before, especially at the present time. Thus the resultant necessity for election of social labor inspectors, and the mobilization of inspectors for carrying out matters relating to workers' rights is currently extremely urgent. Every delay is detrimental to matters of a truly humanistic content for the workers, and for their working conditions. A three-sided front of action, the trade unions, the Social Labor Inspectorate, and the State Labor Inspectorate, create tremendous opportunities for the implementation of appropriate working conditions. This opportunity should not be squandered, it must be fully utilized.

[Interviewer] Thank you for the interview.

It is worthwhile to note that the State Labor Inspectorate and the Regional Labor Inspectorate, headquartered in Krakow at 5 Szczepanski Square (Room 515, 5th floor, telephone 22-67-80, or 22-75-11, ext 626) initiated this as a consultative location which is open on Tuesdays and Fridays from 1100 to 1600 hours. Similar services are available at the local offices of the Regional Labor Inspectorate on Tuesdays from 1100 to 1500 hours, in Tarnow at 16 Warynski Street (tel 69-55), and in Nowy Sacz at 44 Kraszewski (tel 204-37).

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